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To

THE KING'S MOST EXCELLENT MAJESTY.

May It Please Your Majesty,

We, the Commissioners appointed to examine and report on the present conditions of agricultural and rural economy in British India, and to make recommendations for the improvement of agriculture and to promote the welfare and prosperity of the rural population; in particular to investigate :—(*a*) the measures now being taken for the promotion of agricultural and veterinary research experiment, demonstration and education, for the compilation of agricultural statistics, for the introduction of new and better crops and for improvement in agricultural practice, dairy farming and the breeding of stock; (*b*) the existing methods of transport and marketing of agricultural produce and stock; (*c*) the methods by which agricultural operations are financed and credit afforded to agriculturists; (*d*) the main factors affecting rural prosperity and the welfare of the agricultural population; and to make recommendations; availing ourselves of Your Majesty's permission to report our proceedings from time to time, desire to submit to Your Majesty the minutes of the evidence which we have taken up to the 25th of November 1926 on the subject of our Inquiry.

All of which we most humbly submit for Your Majesty's most gracious consideration.

(Signed) LINLITHGOW,
Chairman.

(„) H. S. LAWRENCE.

(„) T. H. MIDDLETON.

(„) GANGA RAM.

(„) J. MACKENNA.

(„) H. CALVERT.

(„) GAJAPATI NARAYANA DEO.

(„) N. GANGULEE.

(„) L. K. HYDER.

(„) B. S. KAMAT.

(Signed) J. A. MADAN,

(„) F. W. H. SMITH,

Joint Secretaries.

25*th May* 1927.

TERMS OF REFERENCE

Generally,

To examine and report on the present conditions of agriculture and rural economy in British India and to make recommendations for the improvement of agriculture and the promotion of the welfare and prosperity of the rural population;

In particular to investigate—

(*a*) the measures now being taken for the promotion of agricultural and veterinary research, experiment, demonstration and education, for the compilation of agricultural statistics, for the introduction of new and better crops and for improvement in agricultural practice, dairy farming and the breeding of stock;

(*b*) the existing methods of transport and marketing of agricultural produce and stock;

(*c*) the methods by which agricultural operations are financed and credit afforded to agriculturists;

(*d*) the main factors affecting rural prosperity and the welfare of the agricultural population;

and to make recommendations.

It will not be within the scope of the Commission's duties to make recommendations regarding the existing system of landownership and tenancy or of the assessment of land revenue and irrigation charges, or the existing division of functions between the Government of India and the local Governments. But the Commission shall be at liberty to suggest means whereby the activities of the Governments in India may best be co-ordinated and to indicate directions in which the Government of India may usefully supplement the activities of local Governments.

QUESTIONNAIRE

PART I

Question.

1. Research.
2. Agricultural education.
3. Demonstration and propaganda.
4. Administration.
5. Finance.
6. Agricultural indebtedness.
7. Fragmentation of holdings.

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10. Fertilisers.
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20. Marketing.
21. Tariffs and sea freights.
22. Co-operation.
23. General education.
24. Attracting capital.
25. Welfare of rural population.
26. Statistics.

QUESTIONNAIRE

PART I

1. Research.

(*a*) Have you suggestions to advance for the better organisation, administration and financing of—

(*i*) All research affecting the welfare of the agriculturist, including research into the scientific value of the indigenous theory and traditional methods of agriculture,

(*ii*) Veterinary research ?

(*b*) If in cases known to you progress is not being made because of the want of skilled workers, or field or laboratory facilities for study or by reason of any other handicaps, please give particulars. [Suggestions of a general kind should be made under (*a*) ; answers under this heading should relate to specific subjects. The purpose is to secure a list of the problems met with by scientific investigators in the course of their work which are being held over because of lack of resources or deficient organisation.]

(*c*) Can you suggest any particular subject for research not at present being investigated to which attention might usefully be turned ?

2. Agricultural Education.

With reference to any form of agricultural education of which you may have experience, please state your views on the following :—

(*i*) Is the supply of teachers and institutions sufficient ?

(*ii*) Is there an urgent need for extension of teaching facilities in any district or districts known to you personally ?

(*iii*) Should teachers in rural areas be drawn from the agricultural classes ?

(*iv*) Are the attendances at existing institutions as numerous as you would expect in present circumstances ; if not, state reasons. Can you suggest measures likely to stimulate the demand for instruction ?

(*v*) What are the main incentives which induce lads to study agriculture ?

(*vi*) Are pupils mainly drawn from the agricultural classes ?

(*vii*) Are there any modifications in existing courses of study which appear to be called for ; if so, what are they ?

(*viii*) What are your views upon (*a*) nature study ; (*b*) school plots ; (*c*) school farms ?

(*ix*) What are the careers of the majority of students who have studied agriculture ?

(*x*) How can agriculture be made attractive to middle class youths ?

(*xi*) Are there recent movements for improving the technical knowledge of students who have studied agriculture ?

(*xii*) How can adult education in rural tracts be popularised ?

(*xiii*) In suggesting any scheme for better educational facilities in rural areas, please give your views for (*a*) its administration and (*b*) its finance.

3. Demonstration and Propaganda.

(*a*) What are the measures which in your view have been successful in influencing and improving the practice of cultivators ?

(*b*) Can you make suggestions for increasing the effectiveness of field demonstrations ?

(*c*) Can you suggest methods whereby cultivators may be induced to adopt expert advice ?

(*d*) If you are aware of any striking instances of the success or the failure of demonstration and propaganda work, please give particulars and indicate the reasons for success or for failure.

4. Administration.

(*a*) Do you wish to suggest means towards the better co-ordination of the activities of the Governments in India or to indicate directions in which the Government of India may usefully supplement the activities of the local Governments ?

(*b*) Is it your opinion that the expert scientific knowledge required in the development of agriculture in the different Provinces could be supplied to a greater extent than is the case at present by increasing the scientific staff of the Government of India ? If so, indicate the types of work which would benefit by pooling the services of experts, and suggest how that work should be controlled.

(*c*) Are you satisfied from the agricultural standpoint with the services afforded by—

(*i*) The Agricultural and Veterinary Services,
(*ii*) Railways and steamers,
(*iii*) Roads,
(*iv*) Meteorological Department,
(*v*) Posts, and
(*vi*) Telegraphs, including wireless ?

If not, please indicate directions in which you think these Services might be improved or extended.

5. Finance.

(*a*) What are your views as to the steps that should be taken for the better financing of agricultural operations and for the provision of short and long-term credit to cultivators ?

(*b*) Do you wish to suggest means whereby cultivators may be induced to make fuller use of the Government system of *taccavi* ?

6. Agricultural Indebtedness.

(*a*) What in your opinion are :—

(*i*) the main causes of borrowing,
(*ii*) the sources of credit, and
(*iii*) the reasons preventing repayment.

(*b*) What measures in your opinion are necessary for lightening agriculture's burden of debt ? For example, should special measures be taken to deal with rural insolvency, to enforce the application of the Usurious Loans Act, or to facilitate the redemption of mortgages ?

(*c*) Should measures be taken to restrict or control the credit of cultivators such as limiting the right of mortgage and sale ? Should non-terminable mortgages be prohibited ?

7. Fragmentation of Holdings.

(*a*) Do you wish to suggest means for reducing the loss in agricultural efficiency attendant upon the excessive subdivision of holdings ?

(*b*) What are the obstacles in the way of consolidation and how can they be overcome ?

(*c*) Do you consider legislation to be necessary to deal with minors widows with life interest, persons legally incapable, alienation and dissentients, and to keep disputes out of the courts ?

PART II

8. Irrigation.

(*a*) Name any district or districts in which you advocate the adoption of new irrigation schemes, or suggest extensions or improvements in the existing systems or methods of irrigation by—

(*i*) Perennial and non-perennial canals,
(*ii*) Tanks and ponds,
(*iii*) Wells.

What are the obstacles in your district or Province to the extension of irrigation by each of the above methods ?

(*b*) Are you satisfied with the existing methods of distributing canal water to cultivators ? Describe the methods that have been employed to prevent wastage of water by evaporation and by absorption in the soil. What form of outlet for distribution to cultivators at the tail end do you regard as the most equitable and economical ? Have these methods and devices been successful, or do you wish to suggest improvements ?

(*N.B.*—Irrigation charges are *not* within the terms of reference of the Commission, and should not be commented upon.)

9. Soils.

(*a*) Have you suggestions to make—

(*i*) for the improvement of soils, whether by drainage or other means, not dealt with under other headings in this questionnaire.
(*ii*) for the reclamation of Alkali (Usar) or other uncultivable land,
(*iii*) for the prevention of the erosion of the surface soil by flood water ?

(*b*) Can you give instances of soils known to you which, within your recollection, have—

(*i*) undergone marked improvement,
(*ii*) suffered marked deterioration ?

If so, please give full particulars.

(*c*) What measures should Government take to encourage the reclamation of areas of cultivable land which have gone out of cultivation ?

10. Fertilisers.

(*a*) In your opinion, could greater use be profitably made of natural manures or artificial fertilisers ? If so, please indicate the directions in which you think improvement possible.

(*b*) Can you suggest measures to prevent the fraudulent adulteration of fertilisers ?

(*c*) What methods would you employ to popularise new and improved fertilisers ?

(*d*) Mention any localities known to you in which a considerable increase in the use of manures has recently taken place.

(*e*) Has effect of manuring with phosphates, nitrates, sulphate of ammonia, and potash manures been sufficiently investigated ? If so, what is the result of such investigation ?

(*f*) What methods would you employ to discourage the practice of using cowdung as fuel ?

11. Crops.

(*a*) Please give your views on—

(*i*) the improvement of existing crops,

(*ii*) the introduction of new crops including fodder crops,

(*iii*) the distribution of seeds,

(*iv*) the prevention of damage by wild animals.

(*b*) Can you suggest any heavy yielding food crops in replacement of the present crops ?

(*c*) Any successful efforts in improving crops or substituting more profitable crops which have come under your own observation should be mentioned.

12. Cultivation.

Can you suggest improvements in—

(*i*) the existing system of tillage, or

(*ii*) the customary rotations or mixtures of the more important crops ?

13. Crop Protection, Internal and External.

Please give your views on—

(*i*) The efficacy and sufficiency of existing measures for protection of crops from external infection, pests and diseases.

(*ii*) The desirability of adopting internal measures against infection.

14. Implements.

(*a*) Have you any suggestion for the improvement of existing, or the introduction of new, agricultural implements and machinery ?

(*b*) What steps do you think may usefully be taken to hasten the adoption by the cultivator of improved implements ?

(*c*) Are there any difficulties which manufacturers have to contend with in the production of agricultural implements or their distribution for sale throughout the country ? If so, can you suggest means by which these difficulties may be removed ?

PART III

15. Veterinary.

(*a*) Should the Civil Veterinary Department be under the Director of Agriculture or should it be independent ?

(*b*) (*i*) Are dispensaries under the control of Local (District) Boards ? Does this system work well ?

(*ii*) Is the need for expansion being adequately met ?

(*iii*) Would you advocate the transfer of control to Provincial authority ?

(*c*) (*i*) Do agriculturists make full use of the veterinary dispensaries ? If not, can you suggest improvements to remedy this ?

(*ii*) Is full use made of touring dispensaries ?

(*d*) What are the obstacles met with in dealing with contagious diseases ? Do you advocate legislation dealing with notification, segregation, disposal of diseased carcases, compulsory inoculation of contacts and prohibition of the movement of animals exposed to infection ? Failing legislation, can you suggest other means of improving existing conditions ?

(*e*) Is there any difficulty in securing sufficient serum to meet the demand ?

(*f*) What are the obstacles in the way of popularising preventive inoculation ? Is any fee charged, and, if so, does this act as a deterrent ?

(*g*) Do you consider that the provision of further facilities for research into animal disease is desirable ?

If so, do you advocate that such further facilities should take the form of—

(*i*) an extension of the Muktesar Institute, or

(*ii*) the setting up, or extension of, Provincial Veterinary Research Institutions ?

(*h*) Do you recommend that special investigations should be conducted by—

(*i*) officers of the Muktesar Institute, or

(*ii*) research officers in the Provinces ?

(*i*) Do you recommend the appointment of a Superior Veterinary Officer with the Government of India ? What advantages do you expect would result from such an appointment ?

16. Animal Husbandry.

(*a*) Do you wish to make suggestions for—

(*i*) improving the breeds of livestock,

(*ii*) the betterment of the dairying industry,

(*iii*) improving existing practice in animal husbandry ?

(*b*) Comment on the following as causes of injury to cattle in your district—

(*i*) Overstocking of common pastures,

(*ii*) Absence of enclosed pastures, such as grass borders in tilled fields,

(*iii*) Insufficiency of dry fodder such as the straw of cereals or the stems and leaves of pulses,

(*iv*) Absence of green fodders in dry seasons,

(*v*) Absence of mineral constituents in fodder and feeding stuffs.

(*c*) Please mention the months of the year in which fodder shortage is most marked in your district. For how many weeks does scarcity of fodder usually exist ? After this period of scarcity ends how many weeks elapse before young growing cattle begin to thrive ?

(*d*) Can you suggest any practicable methods of improving or supplementing the fodder supply that would be applicable to your district ?

(*e*) How can landowners be induced to take a keener practical interest in these matters ?

PART IV

17. Agricultural Industries.

(*a*) Can you give any estimate of the number of days of work done by an average cultivator on his holding during the year ? What does he do in the slack season ?

(*b*) Can you suggest means for encouraging the adoption of subsidiary industries ? Can you suggest any new subsidiary industries to occupy the spare time of the family which could be established with Government aid ?

(*c*) What are the obstacles in the way of expansion of such industries as beekeeping, poultry rearing, fruit growing, sericulture, pisciculture, lac culture, rope making, basket making, etc. ?

(*d*) Do you think that Government should do more to establish industries connected with the preparation of agricultural produce for consumption, such as oil pressing, sugar making, cotton ginning, rice hulling, utilisation of wheat straw for card-board, utilisation of cotton seed for felt, fodder, oil and fuel, utilisation of rice straw for paper, etc. ?

(*e*) Could subsidiary employment be found by encouraging industrial concerns to move to rural areas ? Can you suggest methods ?

(*f*) Do you recommend a more intensive study of each rural industry in its technical, commercial and financial aspects, with a view to, among other things, introduction of improved tools and appliances ?

(*g*) Can you suggest any other measures which might lead to greater rural employment ?

(*h*) Can you suggest means whereby the people could be induced to devote their spare time to improving the health conditions of their own environment ?

18. Agricultural Labour.

(*a*) What measures, if any, should be taken to attract agricultural labour from areas in which there is a surplus to—

(*i*) areas under cultivation in which there is a shortage of such labour ? and

(*ii*) areas in which large tracts of cultivable land remain uncultivated ?

Please distinguish between suggestions designed to relieve seasonal unemployment and proposals for the permanent migration of agricultural population.

(*b*) If there is any shortage of agricultural labour in your Province, what are the causes thereof and how could they be removed ?

(*c*) Can you suggest measures designed to facilitate the occupation and development, by surplus agricultural labour, of areas not at present under cultivation ?

19. Forests.

(*a*) Do you consider that forest lands as such are at present being put to their fullest use for agricultural purposes ? For instance, are grazing facilities granted to the extent compatible with the proper preservation of forest areas ? If not, state the changes or developments in current practice which you consider advisable.

(*b*) Can you suggest means whereby the supply of firewood and fodder in rural areas may be increased ?

(*c*) Has deterioration of forests led to soil erosion ? What remedies would you suggest for erosion and damage from floods ?

(*d*) Can you indicate any methods by which supply of moisture in the soil, the rainfall and supply of canal water can be increased and regulated by afforestation or by the increased protection of forests so as to benefit agriculture ? Would the same methods be useful in preventing the destruction by erosion of agricultural land ?

(*e*) Is there an opening for schemes of afforestation in the neighbourhood of villages ?

(*f*) Are forests suffering deterioration from excessive grazing ? Is soil erosion being thereby facilitated ? Suggest remedies.

20. Marketing.

(*a*) Do you consider existing market facilities to be satisfactory ? Please specify and criticise the markets to which you refer, and make suggestions for their improvement.

(*b*) Are you satisfied with the existing system of marketing and distribution ? If not, please indicate the produce to which you refer and describe and criticise in detail the channels of marketing and distribution from the producer to the consumer in India (or exporter in the case of produce exported overseas). State the services rendered by each intermediary and whether such intermediary acts in the capacity of merchant or commission agent, and comment upon the efficiency of these services and the margins upon which such intermediaries operate. Please describe

the method by which each transaction is financed, or in the case of barter, by which an exchange is effected.

(*c*) Do you wish to suggest steps whereby the quality, purity, grading or packing of agricultural produce may be improved, distinguishing where possible between produce destined for—

(*i*) Indian markets ?

(*ii*) Export markets ?

(*d*) Do you think that more effective steps might be taken to place at the disposal of cultivators, merchants and traders information as to market conditions, whether Indian or overseas ; crop returns ; complaints as to Indian produce from wheresoever originating ; and agricultural and marketing news in general ?

21. Tariffs and Sea Freights.

Do existing (*a*) customs duties, both import and export, and (*b*) sea freights adversely affect the prosperity of the Indian cultivator ? If so, have you any recommendations to make ?

22. Co-operation.

(*a*) What steps do you think should be taken to encourage the growth of the co-operative movement—

(*i*) by Government,

(*ii*) by non-official agencies ?

(*b*) Have you any observations to make upon—

(*i*) Credit societies ;

(*ii*) Purchase societies ;

(*iii*) Societies formed for the sale of produce or stock ;

(*iv*) Societies for effecting improvements—*e.g.*, the digging of wells and the construction of bunds, walls and fences, or the planting of hedges ;

(*v*) Societies formed for the aggregation of fragmented holdings and their redistribution in plots of reasonable size ;

(*vi*) Societies for the co-operative use of agricultural machinery ;

(*vii*) Societies for joint farming ;

(*viii*) Cattle breeding societies ;

(*ix*) Societies formed for any purpose connected with agriculture or with the betterment of village life, but not specified above ?

(*c*) Where co-operative schemes for joint improvement, such as co-operative irrigation or co-operative fencing or a co-operative consolidation of holdings scheme, cannot be given effect to owing to the unwillingness of a small minority to join, do you think legislation should be introduced in order to compel such persons to join for the common benefit of all ?

(*d*) Do you consider that those societies of which you have personal knowledge have, in the main, achieved their object ?

23. General Education.

(*a*) Do you wish to make observations upon existing systems of education in their bearing upon the agricultural efficiency of the people ? If you make suggestions, please distinguish, as far as possible, between—

(*i*) Higher or collegiate,

(*ii*) Middle school, and

(*iii*) Elementary school education.

(*b*) (*i*) Can you suggest any methods whereby rural education may improve the ability and culture of agriculturists of all grades while retaining their interest in the land ?

(*ii*) What is your experience of compulsory education in rural areas ?

(*iii*) What is the explanation of the small proportion of boys in rural primary schools who pass through the fourth class ?

24. Attracting Capital.

(*a*) What steps are necessary in order to induce a larger number of men of capital and enterprise to take to agriculture ?

(*b*) What are the factors tending to discourage owners of agricultural land from carrying out improvements ?

25. Welfare of Rural Population.

(*a*) Outside the subjects enumerated above, have you any suggestions to offer for improving hygiene in rural areas and for the promotion of the general well-being and prosperity of the rural population ?

(*b*) Are you, for instance, in favour of Government conducting economic surveys in typical villages with a view to ascertaining the economic position of the cultivators ? If so, what, in your opinion, should be the scope and methods of such enquiries ?

(*c*) If you have carried out anything in the nature of such intensive enquiry, please state the broad conclusions which you reached.

26. Statistics.

(*a*) Do you wish to make suggestions for the extension or improvement of the existing methods of—

(*i*) ascertaining areas under cultivation and crops ;

(*ii*) estimating the yield of agricultural produce ;

(*iii*) enumerating livestock and implements ;

(*iv*) collecting information on land tenure, the incidence of land revenue and the size of the agricultural population ;

(*v*) arranging and publishing agricultural statistics ?

(*b*) Have you any other suggestions to make under this heading ?

MINUTES OF EVIDENCE

TAKEN BEFORE THE

ROYAL COMMISSION ON AGRICULTURE.

Thursday, November 11th, 1926.

BANGALORE.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Sir JAMES MACKENNA, KT., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Mr. J. A. MADAN, I.C.S. }
Mr. F. W. H. SMITH. } (*Joint Secretaries.*)

Mr. N. RAMA RAO, Superintendent, Sericultural Department, Mysore Government.

Memorandum of work done in the Department of Sericulture in Mysore up to the present time.

Extent and distribution of the industry.—Mysore is admirably fitted by soil, climate and local conditions for silk production. The industry is at present practised over about a third of the area of the State, to the south of a line joining Chintamani, Sidlaghatta, Chikballapur, Kunigal, Mandya and Nanjangud, and is slowly spreading northwards. The sericulture of Kollegal Taluk (Madras Presidency) is a continuation and organic part of the Mysore system. There is practically no part of the State where climatic conditions do not admit of extension of the industry; the only limiting factor seems to be economic. The total area under mulberry is about 50,000 acres, the value of silk produced is over a crore of rupees, and the industry in its various branches supports about 200,000 families.

Mysore has a distinct race of silk-worm which is polivoltine, and spins a greenish cocoon yielding a beautifully lustrous silk of excellent natural quality. The Mysore worm is hardy and highly resistant to disease, but is slow in arriving at maturity and a poor producer of silk in proportion to the food consumed as compared with univoltine and bivoltine races. It is however one of the best polivoltine worms in existence.

Position of sericulture in Mysore industries.—Sericulture has an important place in the agricultural economy of the State. It employs that part of the labour of the home which is prevented by custom or feebleness from participating in the more strenuous work of the field, and it also employs that part of the time of the ryot which is left unfilled by the operation of the seasons. The utilisation of factors which would otherwise go to waste is wholly a gain, morally as well as materially, and one may claim for sericulture all that is claimed for spinning, with this addition, that it is more profitable, as it turns to account certain differential advantages of climate and natural conditions.

Nature of the industry.—The great bulk of Mysore sericulture is *subsidiary* to agriculture. It is practised by small agriculturists, who, as a rule, do not employ paid labour, nor devote exclusively to rearing either time or house-room or other resources. They generally grow their own food, and depend on the returns from sericulture for clothing and condiments, and for the little extras which brighten their lives. But it must be mentioned that in parts of the State, sericulture has established itself as a *main* industry in successful competition with other occupations. This state of things is to be found in almost all the silk-producing parts of the country, in the vicinity of large markets, such as Channapatna, Chikballapur, and Kollegal. In fact, in all important sericultural areas, there is a nucleus where sericulture is the principal industry. It may be noted that the same thing has occurred in Japan. This concentration seems to take place under the following conditions:—

(1) The soil is more suited for mulberry than for other crops;

(2) the population is much greater than the soil can support if used for food crops, and there is in consequence necessity for a quick-yielding money crop which can remunerate intensive application of labour;

(3) vicinity of large towns or important weekly bazaars affords facility for selling silk and buying food-stuffs and clothing;

(4) there are no competing industries which draw off labour.

Sericulture practised as a main industry is rather more sensitive to external conditions than the normal form and is therefore the first to suffer from unfavourable variations. This is due to the fact that the competition of other crops with mulberry and of other occupations with the rearing of silk-worms is never absent, and makes itself felt when, for some reason, sericulture begins to weaken.

Average returns from individual undertakings.—The Mysore rearer has, on the average, half an acre of mulberry, with which he rears six crops of silk-worms in the year. He loses or used to lose about two of these crops owing to bad seed or inadequate knowledge and resources, but is able notwithstanding to make a net gain of about one hundred rupees a year. The average duration of a crop from start to finish is about six weeks. Apart from its undoubted material advantages, the industry necessitates a certain amount of co-operation and evokes a mental alertness which is more akin to industrial than agricultural pursuits. A sericultural village has generally an air of life and prosperity all its own.

History of sericulture in Mysore.—In spite of obvious advantages, the story of Mysore sericulture is one of vicissitude. In 1866 it had almost died out owing to disease or deterioration of silk-worms, and was temporarily restored by the importation of Japanese seed. The root causes of decay however remained untouched, and one or two bad seasons upset this lightly built restoration. But the vitality due to favourable natural conditions enabled the industry to start with a new lease of life about 1890. It is significant

that in this revival the imported worm had disappeared, and the Mysore worm emerged triumphant. Once again the industry declined, till in 1914-15, it reached its lowest point, with an acreage under mulberry of not much over 25,000. As a result of vigorous State action, the decline has been arrested, and the growth natural to a healthy industry has been restored during the past ten years.

State action.—The efforts made to protect and develop sericulture are a measure of the growing recognition of its importance to the State. Not very long ago, the Education Department was entrusted with teaching sericulture through the agency of village schools—with no great success. The subject was then taken up by the Economic Conference, and a few trained men were sent out for work to sericultural taluks. Each step rendered the scope for advance more obvious. In 1913, Signor W. Mari, an Italian Expert, was appointed to organise sericulture, but was able to remain only for a year, during which time he started a small farm at Channapatna, and made a beginning in the manufacture and issue of cellular seed. After Signor Mari's departure, the work was continued and developed by the Agricultural Committee of the Economic Conference, which did much to popularise disease-free seed, and improve the methods of rearing. The causes of the decline of the industry were investigated, and remedies proposed. The Committee's labours at this critical period in the history of sericulture proved that the situation was not hopeless, and indicated the lines of useful action. In 1916, Signor Mari's services were engaged for a second time, and Mr. N. Rama Rao, an officer of the Mysore Civil Service, who was Secretary of the Agricultural Committee, was associated with him for sericultural work. Signor Mari was only able to draw up a scheme before failing health and the outbreak of the Great War compelled him to return to Italy. Mr. Rama Rao was then appointed Superintendent of Sericulture in addition to his duties as Secretary of the Agricultural Committee. In 1920, the work had developed sufficiently to necessitate the organisation of a Sericultural Department, and the transfer of the whole-time services of Mr. Rama Rao as Superintendent. The new department was associated with the Department of Agriculture as a temporary measure. It secured and utilised to advantage the services of Mr. M. Yonemura, a highly qualified Japanese Expert, for scientific work, and of Miss E. Sato for reeling. Later on it was possible to replace them by members of the department's staff who returned from deputation with high technical training in Europe and Japan, or had been able to specialise by association with the Expert in scientific work.

Economic Conference.

Agricultural Committee.

Organisation of Sericultural Department.

Classification of work in the department.—The activities of the department have been based on a close analysis of the structure and requirements of the industry. Investigation placed it beyond doubt that the instability of Mysore sericulture in the past was due to one or more of the following causes:—

(*i*) Bad or insufficient seed,

(*ii*) faulty methods of rearing and reeling,

(*iii*) bad methods of purchase and sale—resulting in "sweating" at each stage,

(*iv*) want of economic stamina.

That this analysis is in the main correct seems borne out by the success of the action based upon it. The work of the department falls under the following heads:—

Education, Expansion, Improvement of seed-supply, Demonstration and advice—help in case of silk-worm diseases, Loans, Formation of co-operative societies, Establishment of filature and popularisation of Mysore silk, Improvement of reeling—machinery, and methods, Investigation of markets for silk.

Organisation of the department.—The organisation of the department for working out these objects is as follows:—

Circles, Farms, Outposts.

The sericultural parts of the State are divided into four circles, each provided with a well-equipped central farm capable of attending to all the activities of the department in the area allotted to it. These central farms are in the charge of officers called Senior Inspectors, most of whom have high academical and technical qualifications. Each central farm controls a number of subordinate farms, located at strategic points so as to command the sericultural area. There are altogether ten such subordinate farms. Their function is to keep in close touch with the royts, to secure them their requirements in the way of mulberry cuttings, silk-worm seed, rearing and reeling appliances, and loans, and to advise and guide them, when necessary, to procure for them assistance, such as disinfection, etc., in case of silk-worm epidemics, and to render them generally all possible assistance in making the rearings a success.

In addition to the above, when work develops in a new area sufficiently to require continuous attention, outposts are established dependent on the nearest organised farm. These outposts are shifted from time to time according to requirement.

Special Branches—Filature and Reeling, Co-operation, New Areas.

The improvement of reeling, and the filature constitute a separate section under an officer entitled Superintendent of Reeling and Filature, with headquarters at Mysore; and the formation and care of co-operative societies is treated as a special branch of work, and has a Senior Inspector with headquarters at Channapatna to look after it. The expansion in Chitaldrug district is in charge of an Inspector, who at present works in direct subordination to the Superintendent.

The following statement shows the organisation of the Sericultural Department:—

DIRECTION—SUPERINTENDENT OF SERICULTURE (HEADQUARTERS, MYSORE).

- **Central Farms**
  - MYSORE
    - (*Subordinate Farms*) T.-Narasipur, Hole-Narasipur, Nagamangala
    - (*Outposts*) Arkalgud, Hirisave, Malvalli
  - CHANNAPATNA
    - (*Subordinate Farms*) Badadi (Seed)
    - (*Outposts*) Mogenahalli
  - KUNIGAL
    - Hebbur (Seed)
  - KOLAR
    - Hindiganal, Sidlaghatta
- **Reeling and Filature** (Headquarters, Mysore)
- **Co-operation**
- **Expansion in Chitaldrug**
  - Babbur, Nayakanahatti

The total staff, exclusive of clerical, is—

6 Senior Inspectors—4 permanent, 2 temporary.

20 Inspectors—18 permanent, 2 temporary.

30 Operatives { 1st class 10. 2nd class 20.

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The work done by the department under the various heads of activity is summarised below:—

Education.—

Year.	*Education.*
1919-20	16 Long course students.
	6 Short course students.
	26 Panchamas.
1920-21	4 Higher course.
	11 Lower course.
	24 Short course.
	33 Panchama students.
1921-22	10 Long course (mostly volunteers).
	20 Short course.
	11 Panchamas.
	26 Students in Taluk Schools.
1922-23	8 Long course.
	14 Short course.
1923-24	No regular course for want of funds. Yet 20 students in lower course and 3 in higher course were trained.
	1 from Hyderabad.
	2 from Coorg.
	Farm School trained 10 people.
1924-25	10 Higher course.
	10 Lower course.
	5 Short course in Mysore.
	4 Short course in Channapatna.
	6 Short course in Hole-Narasipur.
1925-26	77 Students including 22 in reeling.

Till last year an allotment was usually sanctioned for scholarships in the budget of the department, and it was possible to train men for recruitment. The District Boards have always been very generous in giving stipends to students from their districts, and have evinced great interest in the encouragement of the industry. Students trained by District Boards have invariably settled down on their own lands. It is getting increasingly difficult to find recruits for the department, for want of trained men, and owing to the very low rates of pay allowed to operatives.

Every farm of the department is a school for practical instruction, and profoundly influences rearing methods in the neighbourhood.

In co-operation with the District Board of Mysore, and the Education Department, sericulture has been introduced as an examination subject in two selected Middle Schools at Kuderu and Malavalli. The District Board of Hassan has also sanctioned the opening of a sericultural class on the same lines, at a place to be selected shortly.

Expansion.—Exact statistics of mulberry cultivation are not available. Our ideas of fluctuations in area have to be based on the figures in the Season and Crop Reports, supplemented by direct information and verified by first-hand general impressions. The export trade in silk* furnishes an index of the state of the industry, and the demand for mulberry cuttings and for seed cocoons furnishes another indication. There is no doubt that the industry has been growing by expansion to the north of the old frontier, and that a corresponding strengthening has been going on in the old areas. The years 1923-24 and 1924-25 were bad years, owing to scanty rain-fall and low prices, and in some places—specially where sericulture had become a main occupation—there was an immediate diminution in the area under mulberry. That

* *See* next page.

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the industry did not suffer more severely is due partly to its natural robustness, and partly to the slowness with which causes react on a conservative population. There is however no doubt that to-day the industry has grown to nearly twice the size it was in 1914-15, and that deep-seated sources of danger have been eradicated. In estimating the scope for expansion, there is practically no part of the State where the climatic conditions are such as to preclude the industry; but regard must be had to the economic conditions favourable to its introduction. There are parts of the State where population is so sparse that agriculture and even domestic service are dependent on imported labour; introducing sericulture here is out of the question. There are other parts where wages are high owing to the existence of large centralised industries like mills, mining, factories, and workshops; and others again where there are already suitable subsidiary industries, which it would be inexpedient to disturb. Large sections or communities have religious or sentimental objections to one or more stages of the industry; and this prejudice, where it exists, opposes a fairly formidable barrier to expansion. Allowing for all this, there is no doubt that the sericulture of the State can be developed to about four times its present size, without interfering with any other avocation, but merely by utilising resources which now go to waste. The increased output could easily be absorbed by India, which at present imports about seven crores of rupees worth of silk and substitutes either as yarn or as fabrics. This forecast assumes, of course, that nothing will occur in the meantime to curtail the world's demand for natural silk, and that the distance between silk and rayon and other textiles will remain more or less what it is at present. This is by no means an improbable assumption. The relative position of natural silk and rayon will be referred to again later in the report.

Year.	* SILK EXPORT FROM MYSORE.				TOTAL IN LAKHS.
	SILK.		WASTE.		
	Mds.	Lakhs.	Mds.	Lakhs.	
1915-16	4,611	25·9	3,762	·32	26·7
1916-17	4,622	30·7	4,900	3·3	34·0
1917-18	4,601	35·4	926	·7	36·1
1918-19	6,591	50·9	2,978	2·6	53·5
1919-20 :	6,355	59·6	8,802	8·9	68·5
1920-21	3,621	37·2	6,710	6·9	44·1
1921-22	7,790	77·9	6,699	5·9	83·8
1922-23	7,586	83·5	5,110	4·1	87·6

Seed supply.—The development of this section of work furnishes a measure of the growth of the department in influence and usefulness. Ten years ago, the rearers could with difficulty be persuaded to take 200 layings a year. In 1925-26, we produced 401,056 layings in our grainages, and procured, through

Cellular Seed.

our selected rearers, the production of nearly 70 lakhs of seed cocoons raised with cellular seed; and yet only a part of the demand was met. To produce this

* *See* previous page.

quantity of disease-free seed, the grainages strained their resources to the utmost; and it is probable that the limit with our existing equipment has been reached. The demand is so strong that if we quadrupled our production we could hardly satisfy it. A feature of the present demand is the eagerness of the ryots for the new races. These new races and hybrids, which are a result of our experimental and breeding work, represent an increase in yield of nearly 40 per cent. and a curtailment of the period of rearing by 4 to 5 days in its most expensive part. To produce seed of these races on an adequate scale, it is necessary to have cold storage plant, with which the department has yet to be provided.

Some idea of the value of this branch of the department's work can be formed when it is said that whereas formerly 2 crops used to be lost out of every 5 owing to bad seed, failures from that cause are now comparatively infrequent in areas reached by our seed organisation.

Selected Seed Rearers.

A word of explanation is necessary about selected seed rearers. Since cellular seed is expensive, and its supply is very limited, it is necessary to supplement the work of the grainages—which turn out only cellular seed—by a carefully planned and controlled complain of seed production with the co-operation of selected rearers in the recognised seed centres. The basis of selection is a good mulberry garden, a disinfectable rearing room, and skill and reputation on the part of the rearer. The selected seed-man has to bind himself to rear only cellular layings issued to him from the Government grainages, and to submit to supervision and control. He gets the cellular seed free of cost, his rearing room is disinfected, and he is placed in touch with the great body of rearers requiring seed cocoons. We have now 47 seed rearers in the far-famed seed centres of Bidadi, Kunigal, and Hebbur, capable of producing in the aggregate about 70 lakhs of seed cocoons. Mention must be made of a very notable piece of intensive seed work conducted last year at Mugur, one of the largest silk-worm rearing villages in the State. Three consecutive crops had failed owing to pebrine. The department organised a systematic disinfection of rearing houses, and supplied cellular layings to all rearers. Not a single crop failed.

The following figures show the growth of the seed work of the department:—

1919-20	180,297	D.F. layings distributed to ryots.
1920-21	277,862	D.F. layings were issued.
1921-22	326,193	D.F. layings and 27 lakhs of seed cocoons through Seed Cocoon Campaign.
1922-23	395,959	D.F. layings and 60 lakhs of seed cocoons.
1923-24	240,901	D.F. layings and 90 lakhs of seed cocoons and 9,000 D.F. layings of New Races. (Very unfavourable season.)
1924-25	390,168	D.F. layings (including 12,000 of New Races) and 70 lakhs of seed cocoons.
1925-26	401,056	D.F. layings and 68 lakhs of seed cocoons.

Demonstrations, improvement in rearing, treatment of silk-worm epidemics.—What with the improvement of the seed-supply, and what with the example and the educative influence of the farms, the Mysore ryot, especially in the vicinity of the department's institutions, now gets a yield which represents a substantial improvement over what he used to get in the past. Ten years ago 25 to 30 lbs. was considered a fair yield for a rearing with 100 layings; the present average is somewhere about 40 lbs. The record yield got anywhere was 89 lbs. for 100 layings of a F_1 hybrid, near Channapatna. The improvement consists in better spacing, a more suitable adaptation of food to stage of development, more efficient methods of cleaning, some attention to silk-worm hygiene, and greater care in mounting and harvesting. A very

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large number of demonstrations accompanied with lantern lectures are held every year at important *jatras*, festivals, or other large gatherings of people with the help of the District Boards. Competitions are arranged between improved machinery and the old-time village appliances, and many a convert to rational sericulture has been secured. There were two large Sericultural Conferences at Channapatna and Mysore, held by the District Boards of Bangalore and Mysore, respectively, where a number of important resolutions were passed which are now under consideration. The District Board of Mysore, the premier silk-producing district of the State, co-operated very cordially with the department by giving sericulture a prominent place in all their Conferences and extending to it a very generous measure of encouragement and assistance.

Loans.—As has already been stated, the small rearer has not much economic stamina, and is frequently in need of loans for short terms. He was formerly at the mercy of small moneylenders who practically squeezed him dry; and when, as frequently happened, the moneylender was also a buyer of cocoons, the rearer rapidly lost freedom of sale, and fell into a position of dependence. There are two obvoius remedies—State aid through *taccavi* loans, and the organisation of co-operative credit. Real co-operation suited to the industry is of slow growth, and as will be stated later, a sound and promising beginning has been made. Government have sanctioned a scheme of sericultural loans also; in practice, these loans at present provide for long term credit for capital expenditure, while short term loans are as a rule left to co-operative and private credit. Formerly the administration of these loans was entrusted concurrently to local revenue officers, and the Superintendent of Sericulture; the revised rules of 1925 vest this responsibility solely in the Sericultural Department. The following statement sets forth the amount of loans granted each year:—

Year.	No. of loans.	Amount. Rs.
1916-17	27	3,060
1917-18	11	920
1918-19	3	450
1919-20	4	950
1920-21	21	4,880
1921-22 1922-23 1923-24	Information not available. Loans were granted under old rules by Revenue Officers.	
1924-25	10	2,830
1925-26	39	7,450

Co-operation.—There is no doubt that sericulture offers an almost ideal field for co-operation, and yet strangely enough till last year there was not in existence a single sericulture co-operative society. One had been started by the Co-operative Department some years ago at Sidlaghatta, but it failed. It was obvious that existing types of society would not do, and that the industry required a distinctive type, combining short-term credit with supply of seed and appliances, technical guidance, and aid in marketing. The work of such a society is sericulture first, and co-operation afterwards; and close and constant technical direction is essential. A type of society suited to Mysore sericulture was worked out. Government approved of the scheme, and sanctioned a special Senior Inspector for working it. They placed a sum of Rs. 2,800 with the Registrar of Co-operative Societies for being advanced to sericultural societies. *Ten* societies were formed during the year in the following villages, which were prepared for the development by careful propaganda:—

(1) Mangalwarpet, (2) Malurpatna, (3) Chakkere, (4) Mogenhalli, (5) Closepet, (6) Sidlaghatta. (7) Thimmasandra, (8) Kudlur, (9) Mugur, (10) Karohatti.

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Most of these societies have started very well, and show great willingness and aptitude, but have more than justified the anticipation that close and constant technical guidance is vital, at least in the initial stages.

Filature, village and domestic reeling.—A small filature of 12 basins of the French type was installed in Mysore in 1922. The object was to train labour, experiment in reeling technique, test the reeling quality of cocoons, and familiarise the silk world with Mysore sericulture. This filature started with exporting silk to France and England, and is now devoting itself to the manufacture of high grade silk capable of utilisation in Indian weaving. It is slowly educating the Indian demand, and preparing the way for grading up the quality of Mysore silk as a whole. It would be very useful if the filature were supplemented by a small throwing mill and a weaving establishment. The filature is capable of producing about 300 lbs. of silk a month.

A filature, equipped also with a throwing plant, has been established by private enterprise at Bangalore.

Filatures have undoubtedly an important part to play in raising the industry by giving a lead in the improvement of reeling, and by preparing the way for superior silk by advertisement and securing a demand; yet the country's silk as a whole can only be benefited by gradually improving the equipment and methods of the village reelers.

Village and Domestic Reeling.

Last year experiments were conducted with various types of domestic basin; demonstrations were organised on a large scale, and constructive criticism was invited from all eligible quarters. The result of the investigation may be summarised as below:—

(1) It is essential to the development of Mysore sericulture and even to its stability, that the quality of the raw silk produced should be improved and made uniform, so as to extend the scope of its employment in manufactures. At present, its low quality confines it to a narrow and comparatively unremunerative market.

(2) Conditions in Mysore make it imperative that this improvement must commence in the villages in close touch with the rearing industry; and it cannot be imposed from outside by the establishment of filatures. The improvement of raw silk is dependent on the improvement of cocoons by the provision of good seed and employment of better rearing methods on the one hand, and the introduction of more efficient reeling machinery on the other. In Mysore, reeling cannot, without disaster, be dissociated from seed production and rearing.

(3) The reeling machinery should satisfy the following conditions:—

(*a*) It must possess all the essential working parts of the latest type of filature basin, which ensure proper size, strength and cohesion.

(*b*) It must be strong, simple in construction and capable of being attended to by the village smith with his ordinary resources.

(*c*) Its initial cost must be within the means of the average village family; its working should demand no special skill or expense, and it should exact no requirements in the way of furniture.

(*d*) It should be portable, and should lend itself to gradual expansion by the addition of fresh units, securing fresh economies with each expansion.

(*e*) While not inferior in efficiency to the best foreign basin, it should compare favourably with the village *charka* in cheapness of operation and adaptability to rural conditions.

It is obvious that (*b*), (*c*), (*d*), (*e*) put the foreign basins out of court at once. To satisfy these conditions, a basin was designed and patented under

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the name of the "Mysore Domestic Basin." This basin can be worked either singly, or in combinations consisting of two or more. Probably five form the most advantageous combination, as they can be operated by a single turner. They have been successfully tested throughout the State, and have invariably elicited great interest and enthusiasm during demonstrations. Silk reeled with the domestic basin is nearly as good as filature silk, and fetches prices fully 30 per cent. higher than silk produced with the village *charka.*

Mysore Domestic Basin.

Experiments.—Important experiments in silk-worm breeding are being conducted in the Central Farms at Mysore and Channapatna, covering practically the whole field of sericulture. In breeding, the main objects kept in view have been—

(1) selective improvement of the Mysore race of silk-worms,

(2) fixation of new races,

(3) determination of the extent to which hybrid seed could be profitably issued for producing reeling cocoons,

(4) rearing and acclimatisation of pure races for stock in the preparation of hybrid seed.

Besides the progress made towards the objective, the experiments were fruitful in results of great scientific interest. The experiments were only made possible by a free and successful employment—for the first time in India—of the artificial treatment of hibernating eggs so as to make them hatch like multivoltines.

The experimental breeding work disclosed some important facts. The limits of improvement by selection in the pure Mysore race itself are in sight: it is not possible to shorten the rearing period, or to secure a more profitable ratio between the yield of silk and the consumption of mulberry leaves. The experimental work has been rich in results of great value to the industry, but to take full advantage of them, it is necessary to have more grainage and rearing space, more staff, and facilities for controlling temperature. The rearers are anxious to rear the improved seed and seed of higher yielding races, but the department is not at present equipped to meet the demand.

Organisation.—Sericulture has its roots in the economic life of the country, and is necessary to its progress and happiness. Improvement of seed and technical methods would be barren of result without an organisation that secures to the workers the full benefits of their labour. No industry can prosper without a power of adaptation to changing conditions and without the capacity to assimilate new ideas. Its progress depends on the readiness with which it can benefit by the advance of knowledge, and this requires alertness and power of internal adjustment, or in other words, a broad-based organisation which can keep abreast of technical progress, and which can safeguard the industry by influencing production, and by securing an appropriate place in markets. The organisation (this is my personal opinion) must begin in the village, with a co-operative society or panchayat; the co-operative societies, panchayats and leading sericulturists of a taluk may form a Taluk Association, and the process of federation may rise through taluk and district, till it culminates in a Central Silk Association for the State, capable of representing the industry and looking after its interests. Steps are being taken, with the approval of Government, to form a Provincial Silk Association, which will probably have ramifications extending into taluks. It is necessary also to have a Conditioning House in the State.

Summary of past work.—The chief measures for which the department has been responsible are:—

(1) Organisation of Government grainages.

(2) Organisation of aided grainages.

(3) System of selected rearers of seed cocoons.

(4) Organisation of supply of mulberry cuttings to aid expansion.

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(5) Organisation of practical instruction to new rearers and reelers.
(6) Provision of sericultural loans.
(7) Concessions for introducing sericulture in new areas and among the depressed classes.
(8) Establishment of filature.
(9) Designing new types of basin for Mysore conditions.
(10) Establishing new races and breeds of silk-worm.
(11) Organisation of co-operative societies.
(12) Securing co-operation and assistance from Local Boards.
(13) Investigation of South Indian markets.
(14) Concessions for the formation of mulberry topes.
(15) Introduction of sericultural instruction in two middle schools, in co-operation with the Education Department.

Programme of work for the future.—The programme of work for the future will not only have to maintain progress on the lines already established, but will have to provide for the following important developments:—

(1) Establishment of cold storage plant in the Central Farms.
(2) Investigation of the requirements of Indian silk manufacturers and adaptation of Mysore raw silk thereto.
(3) Organisation of trade, and the establishment of suitable centres of distribution.
(4) Standardisation of Mysore silk and establishment of a Conditioning House.
(5) Formation of local silk associations which are in quick touch with all branches of the industry and their affiliation to a Central Provincial Silk Association.
(6) Development of sericultural co-operation so as to embrace every part of the industry.
(7) Legislative control of seed production and of epidemic diseases.
(8) Protection for Mysore silk.

This work has been and is being done in Japan, and is equally necessary here. The work requires more staff and more equipment and is of a magnitude to tax the energies of the department for the next twenty years. Later on, it may be possible to transfer some of the functions to local bodies retaining only scientific work and control in the department.

Conclusion.—There is evidence of an essential change in the outlook of the Mysore silk industry. Till quite recently, we were in secure possession of the South Indian market which took our average saleable output, however coarse, provided only it was cheap. The combination of cheapness and badness held our industry in thrall, but kept it alive. Now, things are changing. Better reeled foreign silks, and artificial silk, and with its cheap glitter-irresistible to the untutored eye have invaded the traditional markets, and are fiercely competing with Mysore silk. One usually reads in foreign journals that artificial silk—or rayon as it is called—can never displace natural silk, and so on; and this is no doubt true, but with two important provisos—*viz.*, (1) the natural silk must be a high grade article, like what is imported into Europe and America, (2) the consumers must possess sufficient enlightenment to know what they are buying, and to know both what artificial silk is and what it is not. In India where much of the natural silk is reeled in a low grade, and where a large proportion of the consumers look upon rayon as a durable foreign silk possessing the advantage of cheapness, rayon *does displace, and is displacing* real silk. In the long run, a better knowledge of rayon may confine its employment within just bounds; but it is possible that this knowledge may come too late to save Mysore sericulture from irremediable injury. There is evidence that in Mysore, the very home of silk, a large proportion of the looms which formerly employed only real silk, now take rayon, and

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that rayon fabrics are penetrating into middle class homes. Usually, bad seasons, by contracting the output of silk, raise its prices; but last year the industry suffered from the double evil of bad season and low prices. There seems to be no doubt that one of the causes of this abnormality is the increasing vogue of rayon. One has only to know that the imports of rayon into India have increased from 19·4 lakhs of rupees in value in 1922 to 204·25 lakhs of rupees in 1925 to realise the magnitude of this menace to our silk industry. The world's production of rayon in this period has grown from 79·3 million pounds to 185·5 million pounds; and much of the accumulated capital and disciplined skill of some of the most progressive countries in the world are devoting themselves to increase, improve and cheapen this product. With proper direction and improvement the natural silk industry ought to rise above the plane of direct conflict with this giant organisation by producing a high class fibre which supplies a distinctive demand which will not accept a substitute; but in a cottage industry practised by the ryot classes, adjustment to new conditions is a very slow process indeed, and in the meanwhile the industry itself may suffer lasting harm. Experience shows that our ryots are very tenacious of sericulture so long as any hope is left; but once they are driven from it, nothing will induce them to take it up again. In fact, the places where sericulture once existed but exists no more, seem blighted with a curse against its revival. The reason is, that each acre which goes out of mulberry is a loss in capital alone of over a hundred rupees, and the wrench in economic life resulting from the loss of an established occupation paralyses the spirit of enterprise. And this is a loss which falls on a specially poor, hardworking class of people.

There can be no doubt that our silk needs protection against foreign silk and more specially against rayon. This is not the place for discussion of the subject; it may suffice to say that the Board of Agriculture recorded it as their considered opinion that:—

"In view of the growing menace to the silk industry from the competition of foreign silks and silk goods on the one side, and of artificial silk and artificial silk goods on the other, it is essential that strong measures should be taken for the protection of the industry."

Apart from this, it is equally essential that Mysore should produce cocoons at less cost by employing better seed and improved methods, produce better silks by employing more efficient and up-to-date machinery, and standardise production by adapting it carefully to markets. All this is necessary not only for improvement but for survival. A Silk Association with ramifications reaching out into taluks and centres of production, and a State Conditioning House seem absolutely essential to safety.

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Oral Evidence.

9023. *The Chairman:* Mr. Rama Rao, you are Superintendent of Sericulture in the State of Mysore?—Yes.

9024. You have provided the Commission with a very interesting memorandum on the work done in the Department of Sericulture in Mysore. It is very complete, but there are a few questions which I should like to ask you. The first deals with co-operation. Have you had a long experience of the co-operative movement in Mysore State?—Yes.

9025. Are you a believer in co-operation in connection with sericulture? —I am a sincere believer in it. I think co-operation offers the only solution to most of our difficulties.

9026. On the credit side, does sericulture call for any capital on the part of the cultivator?—Practically no capital.

9027. So that, these co-operative societies have not dealt with credit to a great extent?—Not to any great extent. Sericulture is not a capitalist industry, that is what I mean when I say that sericulture calls for no capital; but the sericulturist is frequently in need of small sums of money, and that is where a co-operative society can come to his assistance.

9028. Would you let the Commission have some amplification of the statement on co-operation which begins on page 8 of the memorandum? Can you tell us the scope of these societies? What exactly they do for the sericulturist?—They practically help the sericulturist in every stage of his operations. They purchase seed for him; they find mulberry cuttings for him, because he has to plant mulberry before he does anything else; they find disease-free seed for him; they find technical guidance for him; they help him to market his produce; they lend him small sums of money when he is in need of such help, and if he wants to reel his cocoons they help him to do so.

9029. So that their credit work is really confined to the supply of seed and appliances on a credit basis, with an occasional advance of money if the sericulturist is in immediate difficulty?—That is so. It is essentially a short-term credit. The money is never lent out for longer than three months; the usual period is 45 days; but supposing that through no fault of his own the borrower is unable to repay the money within that term, they grant him one extension. The longest term for which money is left with any borrower is three months.

9030. Normally for only one crop?—That is the position, but if the crop is lost through no fault of the borrower, he gets time until the next crop is ready.

9031. I want you to give the Commission, if you will, a picture of how you go about establishing a co-operative organisation in a village which is taking up sericulture for the first time. Where do you get your expert advice from?—It is very difficult to get a village to take up sericulture for the first time. A co-operative society can only be started in a village where sericulture has been established for sometime. You must have a sufficient number of people practising the industry, and even then there is difficulty in starting a co-operative society. Though sericulturists are used to practical co-operation, the name sometimes calls up to them associations of co-operative societies that have failed, and that kind of thing. We have to convince them that they have been co-operating with one another, without knowing it, that they have got common aims which can best be met by common action; and then we have to get together a number of people who can work together and start a co-operative society. It is very difficult to start a co-operative society and I would not start one in a village where sericulture is new.

9032. I am concerned to discover from you, if I can, who it is that provides the technical advice, which is one of the services, according to this memorandum, which the co-operative society renders to its members?—The Sericulture Department provides it. A Sericulture Society is started by the Sericulture Department, in consultation with the Department of Co-operation, and the technical advice is furnished by the Sericulture Department to start with. But the sericulture co-operative society is also requested to depute some intelligent member to undergo training in the nearest Government farm.

9033. What is the system of management of these societies?—The financial side of the management is done by the Registrar of Co-operative Societies, that is, the officer in charge of the Co-operative Department, and the technical operations are supervised by the Sericulture Department.

9034. So that members of the society do not manage the society?—It is the guidance that I am speaking about. All that the members can do they are encouraged to do, but there is a good deal that they cannot do in the present state of things, and there we come to their assistance and do that for them.*

9035. How old is the oldest successful society that is working at the moment?—It is about 18 months old.

9036. Do you look forward to the day when these societies will be able to provide themselves with efficient management and also provide themselves with technical advice?—I am confident they will be able to do it after some experience is gained, but it takes time; I think it will take five years.

9037. Would you care to give the Commission the total figure in your budget on account of sericulture?—I can give the figure approximately; we spend altogether about Rs. 85,000 on the average and we get back some of it in the way of returns.

9038. How much do you get back?—About Rs. 10,000.

9039. So that you have a net average expenditure of about Rs. 75,000?—Yes; the figures are approximate.

9040. What is the total population interested in sericulture?—200,000 families.

9041. *Dr. Hyder:* In these two memoranda at one place you say 200,000 families and in another you say 200,000 people. Which is correct?—The second memorandum† is not mine.

9042. Which one is yours?—The big one.

9043. *The Chairman:* And that is the correct one, is it?—Yes.

9044. *Dr. Hyder:* What proportion of your population would those 200,000 families comprise?—It would be about one-eighth of our total population.

9045. *The Chairman:* Can you estimate the total value of the industry to the people themselves?—Yes, I would estimate it at over a crore of rupees, and that is a conservative estimate.

9046. Have you considered the possibility of the extension of this industry to areas in British India not at present engaged in sericulture?—No.

9047. Do you know the conditions of the industry in British India?—I know of the conditions in some parts of British India; I have seen something of the industry in Bengal, but not much. I know rather more about the industry in Kollegal in the Coimbatore district; that is practically a continuation of our sericultural area.

* Appendix I.

† Not printed. A memorandum on *the Silk Industry of Mysore* by Mr. F. L. Silva of the Bangalore Silk Filature. (Government Press, Bangalore, 1926.)

9048. Does the Bengal sericulturist use the same worm?—It is not the same worm. The usual worm reared in Bengal is smaller than the Mysore one; it spins a smaller, flimsier yellow cocoon; ours is light green; the Bengal one is called *Nistri*.

9049. Is the food-supply of the Mysore worm confined entirely to the mulberry?—Entirely.

9050. Is the mulberry crop liable to failure for any particular reasons?—There are a few minor pests, but there has not been any serious one, so far as I am aware. Generally, the difficulties experienced in mulberry cultivation are found to be connected with the water-logging of the soil or other causes.

9051. *Mr. Calvert:* Is it bush mulberry or tree mulberry that you cultivate in Mysore?—The distinction is merely cultural; there are mulberry trees also in Mysore, but our usual method of cultivation is bush, and even in bush mulberry there are two or three varieties of cultivation practised; the method adopted in each case depends on the amount of irrigation available

9052. *The Chairman:* How long does a mulberry plantation, once planted, last?—The plantation is renewed once in 20 years. There is no need to do it, I think, with proper cultural methods, but we have no experience.

9053. Does the mulberry plantation represent an important capital from the sericulturist's angle?—Certainly; it takes about Rs. 100 to establish one acre of bush mulberry. It is not invested all at one time, but when mulberry has been established on about an acre of land, it represents about Rs. 100 of capital.

9054. Is the credit to carry the sericulturist over the earlier periods of his planting provided by the co-operative societies?—There are not enough co-operative societies to provide money to any appreciable extent.

9055. Do you aim at that?—No, I do not. I think that the sericultural co-operative societies had better confine themselves to short-term credit for the periodical operations connected with the silk-worm rearing industry.

9056. Credit in connection with mulberry would require long-term credit?—Yes.

9057. In your view, is the competition of artificial silk with natural silk increasing?—I have made enquiries which tend to show that the competition of artificial silk is being felt, and it is bound to increase, but I think it is only a temporary phase.

9058. On what do you base that view?—On the fact that artificial silk can never for any length of time compete with real silk, because it has certain points of natural inferiority which cannot be overcome. For instance, it has got a lustre, which makes it easy to detect that it is not the real article but only an imitation; for another thing, it has not got the necessary tensile strength especially when moist, and it does not take certain dyes as well as natural silk does.

9059. The tensile strength of the artificial silk and the durability of the finished artificial fabric have improved a great deal of recent years, have they not?—They have improved a good deal, but they can never come up to that of real silk unless, probably a higher class of raw material is used than is employed at present, and that would raise the cost. The most important point in favour of artificial silk is that it satisfies certain tastes and that it is cheaper than silk. I would add there is a distinctive demand for natural silk which artificial silk can never supply. Artificial silk has certain points of inferiority which cannot be removed without raising the cost of production so much that the advantage of cheapness would disappear.

9060. How about the relative price of the fabrics in India to-day? Is there a wide gap in price between the real and the artificial?—The gap is very wide; I am speaking of the fabrics which our women wear; a good silk

fabric would cost Rs. 70 for a piece of 9 yards, whereas a fairly colourable imitation of a similar size would cost about Rs. 15.

9061. That is a very marked difference?—Yes, a very marked difference.

9062. Have you hopes of reducing the cost of production of the real silk? —I have.

9063. Do you think it might be possible to reduce it to an important extent?—I think so; I am hopeful that with better organisation, the improvement of our seed supply, and the improvement of our reeling, we might be able to reduce it by about 30 per cent.

9064. As much as that?—Yes; as much as that.

9065. That means reducing the mortality of the worm considerably; does it not?—Yes, and also increasing the silk content of the cocoons spun by the worm.

9066. Do the epidemic diseases, which do so much damage to the worm, come in cycles?—I have not noticed any periodicity about the occurrence of these epidemics but they are most severe when, for want of rain or other reasons, the supply of silk-worm food is scanty or of poor quality.

9067. Is it your view that your knowledge now enables you to keep in check the known diseases of the silk-worm?—It certainly does.

9068. I suppose that the business of sericulture is a traditon of long standing in certain communities in the State. Is it very difficult to persuade districts which have not been accustomed to the practice of sericulture to take it up?—I have noticed this about the extension of sericulture, that it generally extends by overflow; there is an area where sericulture is established and it spreads from that area.

9069. From village to village?—Yes, from village to village. You cannot easily plant a sericulture colony in a place where sericulture has not been carried on before; it is very difficult. Sericulture is slowly extending in Mysore, and it is extending from old areas to new ones. We made some efforts to introduce sericulture in places where conditions seemed suitable but where it had not been practised before; we are interesting people, but we do not succeed in making them take up the industry.

9070. You have never had a successful effort of that sort?—I would not say never; but it is very difficult work; we feel we had better devote our efforts to some more useful lines.

9071. Can you think of a case where you have introduced sericulture with success in a new area?—Yes; Chitaldrug.

9072. That is the only case?—Yes.

9073. How do you go about establishing these new communities?—I generally satisfy myself by experiment that the conditions there are suitable, I plant a small area with mulberry, and send down a man there with silk-worm seed; after he had reared them there through all the seasons of the year and I am satisfied with the results, I interest some influential local man to take up the industry. I tell him he cannot expect to get very rich himself immediately, but that he will be serving the community by showing them a way to some lucrative profession. Then, I help him; I give him the services of a trained operative from my department who works there a couple of seasons; and then the industry slowly spreads. I find in the beginning that I have to buy the rearer's cocoons; he does not know what to do with them. Generally I place him in touch with markets, I find a market for his silk, but later on he is able to do all this for himself, and then the business requires no more attention from me than only to see that the man gets good seed from time to time.

9074. Are you constantly training assistants who, in their turn, will be capable of going out and demonstrating?—Yes; I have been doing it.

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9075. And I suppose you find it is very important that you should not advocate the taking up of sericulture in areas where it is not likely to be successful; you have to be very careful not to have a failure?—Yes.

9076. You experiment through one season before you make up your mind to recommend it?—I have sometimes experimented through more seasons than that; but one season is the minimum.

9077. In villages which have taken up sericulture on an important scale, how does the industry fit in with the normal business of the farmer?—It does not interfere with it at all; it only employs the spare resources of the farmer's home; that is to say, the time that would otherwise go to waste, the time during which the people would otherwise be idle.

9078. In your view it is an ideal spare-time occupation for cultivators in this country?—Yes.

9079. Can you say in your experience that the taking up of sericulture has not had a bad effect on the ordinary cultivation of the cultivator's farm?—Emphatically that has been my experience. Far from having a bad effect, it has improved the general cultivation also by placing the cultivator in possession of funds which otherwise he would not have commanded.

9080. And going about the country, do you think you notice that sericultural areas are better cultivated areas? Do you go so far as that?—Yes; the sericultural areas are generally more densely populated; they are better cultivated. I would not claim for sericulture the entire credit for the better cultivation; it might be because the land is more fertile and there are more people to work it; but I have found as a rule that sericultural areas are very well cultivated.

9081. On what sort of scale does the small cultivator proceed? What area of ground do you recommend him to plant with mulberry?—That would depend upon how many working people he has got at home, for that practically sets the limit to the extent to which an ordinary household can practise sericulture.

9082. What would an ordinary household consist of?—A husband, a wife, a grown-up son and two little children; such a household can manage about half an acre of mulberry.

9083. What would that half acre give them in terms of silk and value?—If it was good dry land, unirrigated land, what we call *koshki* in Mysore, it would give him Rs. 100 net profit.

9084. *Sir Thomas Middleton:* From which the cost of family labour would be deducted?—It would, for purposes of accountancy, but it costs him nothing because otherwise it would go to waste.

9085. *The Chairman:* It is a spare-time occupation, so that although for purposes of accountancy you would deduct the value of the labour, in fact it is a net gain?—It is a net gain.

9086. *The Raja of Parlakimedi:* What are the factors you take into consideration before introducing sericulture in a village?—I would see whether there was spare labour in the village; whether there was any subsidiary occupation which had already established itself there; I would take care that I do not disturb any occupations which have already been found suitable to the locality, and I would satisfy myself about the climatic conditions.

9087. So, you generally choose big villages densely populated?—It is not the population of the village I consider so much as the population of the locality.

9088. Do you have Taluk Development Associations under the Mysore Government? I see they are doing very useful work in other parts of India?—The local bodies have been doing very useful work in Mysore, and we receive a good deal of help from them. We have got the District Boards; we

used to have Taluk Boards formerly, but now we have village panchayats, the Taluk Boards having been abolished. The local bodies help us.

9089. Do they look into the question of providing agriculturists with home industries?—Yes; that is a very important item of work with them; the District Boards take a great deal of interest in that.

9090. Do they consult you constantly?—Yes; we are generally invited to attend their meetings and we are generally co-opted to the sub-committees which deal with economic questions.

9091. Whom do you hold responsible for seed distribution?—Ourselves.

9092. The department itself?—Yes.

9093. You do not entrust it to any village organisation?—Where co-operative societies exist, there are about eleven of them in existence now, we hand over the distribution of seed to them; otherwise our farms, of which there are a number distributed over the sericulture areas, are utilised as seed depôts. The farm officers go among the farmers, book indents for seed and send us a consolidated indent.

9094. *Mr. Calvert:* Who goes to the villages?—The people who manage our farms. There are a number of farms distributed over the State, and have got men in charge of them.

9095. Men in charge of the Government farms?—Yes.

9096. *The Raja of Parlakimedi:* What are the well-known subsidiary industries of the agriculturists in addition to this?—Rope-making, mat-weaving, carpentry, and in some places cattle-breeding.

9097. Of course sericulture does not interfere with any of these?—No.

9098. In dry land, what is the richest crop you can grow in these parts? —Mulberry.

9099. Do you not have ground-nut?—We do have ground-nut.

9100. Compared with sericulture, considering the expenditure and trouble which one has to undertake, how does it stand in yield?—It is nowhere near sericulture.

9101. Can you give a rough idea of the difference of percentage between the two?—I can give you very accurate figures about sericulture, but my impression about ground-nut cultivation may not be so accurate. The return from sericulture is about Rs. 200 an acre on dry land, provided the land is suitable; here ground-nut is not grown on dry land of the same quality as that on which mulberry is grown; I think the return from ground-nut is somewhere between Rs. 30 and Rs. 45 an acre.

9102. Does your department co-operate with the Agricultural Department?—My department is under the general control of the Director of Agriculture, and in regard to scientific work I get a good deal of co-operation from the Agricultural Department.

9103. You work in harmony with that department; you consult each other?—Absolutely.

9104. *Sir Henry Lawrence:* Are you still Secretary of the Agricultural Committee?—No.

9105. You were so?—I was so for two years.

9106. *The Raja of Parlakimedi:* Why do you not try castor as one of the crop useful for the worms to feed upon?—Mulberry silk-worms do not eat castor leaves.

9107. There is a variety in Bengal which does so?—Yes, the *Eri*.

9108. Do they not do well in this climate?—They do well but they are not as good value for the work done in rearing as the worms that feed on mulberry. They are not generally reared where mulberry silk worms can be reared.

9109. Even if you take away the leaves of castor the plant still bears fruit, so that the agriculturist will be getting a castor crop and he will be

benefited by sericulture also. So, I think it is a thing which ought to be thought of. You have not considered that point?—I have certainly considered it. I have viewed it from this point of view; the limiting factor, as I have said, is the amount of spare labour available in the home, so that industry is the most suitable for the home which furnishes the best return for the labour; the rearing of the mulberry silk-worm is more profitable than the rearing of the *Eri* silk-worm. I tried *Eri* silk-worms when I was a revenue officer.

9110. You have actually experimented upon them?—Yes.

9111. *Sir James MacKenna:* Do you suffer a good deal from pebrine disease of silk-worms in Mysore?—Yes, we do suffer a good deal.

9112. Are you aware of the work done on that subject by Mr. Hutchinson at Pusa?—Yes.

9113. Did you consult him on the matter?—He had been invited by the Mysore Government at my instance.

9114. You are very optimistic about the possibility of artificial silk declining and natural silk again taking its place. Do you really believe that? —I did not put it in such general terms, or if I did, I did not express myself correctly. I did not say that artificial silk would decline; I said that artificial silk would cease to compete with natural silk, that is, natural silk would rise to a plane where it would avoid direct conflict with artificial silk; that is what I meant. Just now, the competition of artificial silk makes natural silk decline. I said this was a temporary phase of things.

9115. You think things will balance later on?—Yes; when the quality of our natural silk improves, artificial silk will not be able to compete.

9116. And the price comes down?—Yes, that would help.

9117. *Prof. Gangulee:* Do you know of any tract in Mysore where ordinary cultivation has been replaced by mulberry?—In every sericultural district there is a tract where silk-worm rearing has become the chief occupation and not merely a subsidiary occupation.

9118. There is that tendency?—It is not a general tendency; it depends on certain well-marked local conditions; if those conditions exist this thing happens; it begins as a tendency and finally it becomes an established fact, but it depends on the existence of certain conditions.

9119. Instead of growing a foodcrop, he would grow mulberry?—Yes, if the soil is more suitable for mulberry than for foodcrops.

9120. Is there not a great possibility of the expansion of the industry in Mysore?—I think so.

9121. Why do you not start sericulture in your Malnad tract?—Because there is not enough population there.

9122. Scarcity of population?—Yes; and I think in certain parts of the area the air is too moist.

9123. So that the pressure of the population on the land is a factor?—Yes, a very important factor; I would say probably the most important factor, after natural conditions.

9124. *Dr. Hyder:* Is not your Malnad tract devoted to other crops such as coffee and other more valuable crops? Is there enough land for mulberry cultivation?—There is enough land available for mulberry cultivation if the people want to take it up, for they have large areas of waste land.

9125. *The Raja of Parlakimedi:* Where you encourage sericulture in a village, do you see that that village reserves a certain area of land to grow their foodcrops?—I do not need to see it, for the ryot does it for himself. I tell him that sericulture is a good thing in the locality, and then I leave it to his good sense to see in what area he can afford to put in mulberry. We cannot interfere to any great extent with the operation of economic laws; he consults his own convenience; we merely tell him what is good.

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9126. In course of time, there will be that trouble of meeting the demand for foodcrops?—It is possible to make too much of that difficulty. It is not as though we were in an isolated condition which compelled us to produce all our requirements ourselves. So long as we have the means to purchase foodstuffs we can always get them. The main thing is to produce the most valuable thing we can.

9127. You would depend upon importing?—Not importing from foreign countries; in India there are always places where foodstuffs can be had from.

9128. Importing from other parts of India?—Yes.

9129. *Prof. Gangulee:* Ten years ago this industry was declining?—Yes.

9130. You say in this memorandum that one of the reasons was the deterioration of silk-worm?—Yes.

9131. And you imported Japanese silk-worms, did you not?—Yes.

9132. Then you go on to say that this Japanese race of silk-worms was finally replaced by the indigenous race?—Yes.

. 9133. You now depend solely upon your indigenous races. Is that so?—Yes; of course we are conducting experiments to see whether it is possible to improve by cross-breeding, and we are also conducting experiments with pure foreign races.

9134. Have you tried any other races except the Japanese? Have you tried the French breed?—I have tried French seed; I have tried both French seed got from France and French seed got from Kashmir; I have tried Italian seed, Japanese seed, Chinese seed; I have also tried the Madagascar race and the *Nistri* breed.

9135. What is the result of those experiments?—The silk-worms throve and I got cocoons; but I did not see any reason why any of these should displace the Mysore race.

9136. You say, " It is not possible to shorten the rearing period or to secure a more profitable ratio between the yield of silk and the consumption of mulberry leaves ", and yet you maintain that the hybrid breeds would not be profitable?—For one thing, the chances of successfully rearing a brood of Mysore worms are infinitely greater than of successfully rearing foreign silk-worms here; it is easier to rear the former, and the incidence of disease is very much less; and for another thing, the multivoltine race has this advantage that it offers occupation to the workers all the year round, and there is no other silk-worm which is anywhere near as good as the Mysore race which offers the same advantage. That is a very important consideration with us.

9137. You have already referred to the fact that you have been greatly benefited by the research work done by Lefroy, and Hutchinson and other workers in British India?—It has increased our store of knowledge certainly.

9138. For your investigation did you seek assistance from them in any way?—So far as their researches related to conditions in Mysore, I asked them to advise me about the organisation of my grainages; I consulted Mr. Hutchinson in this matter.

9139. Did you ask him to test the purity of seed?—No; but we asked him to test the adequacy of our grainage technique; I wanted to see if other methods could be introduced for the purpose. He expressed the opinion that it was difficult to apply the Pasteur system of examination for pebrine to the case of multivoltine silk-worms; we are mainly concerned with multivoltine. When I read what he said I naturally grew very much concerned; so I requested him to come here and look at our grainages and see whether we were doing the work properly. I took him round, and he was satisfied with the technique.

9140. So the technique that you developed in Mysore was independent of any direct assistance from the researches of Mr. Hutchinson?—Yes, we had

a grainage technique independently of Mr. Hutchinson. He was satisfied with our technique in Mysore, and then he advised me to try a technique which he recommended. I tried that for sometime, and I found that it was not superior to the technique that we were already working, so far as practical results were concerned.

9141. You have a research staff here?—Yes, I have.

9142. With regard to sericultural education, you say that you have introduced this subject in selected middle schools in the State?—Yes.

9143. Is it compulsory?—No, it is an optional subject.

9144. Does it fit in well in the curriculum?—Yes. They have two other optional subjects; this makes a third; I have selected middle schools which are in the heart of the sericultural area, and this option benefits the children of parents who are practising sericulture.

9145. In middle schools?—Yes.

9146. Who teaches this subject of sericulture?—The teachers are nominated by me.

9147. Does this department work in consultation with the Education Department?—Yes. The scheme has been worked out in consultation with the Inspector-General of Education; I select the teachers and send up their names to the Inspector-General of Education, and he appoints them. Their technical work is supervised by me; they are treated for administrative purposes as part of the school staff.

9148. Could you give us an idea of the salary these sericulture teachers get?—Rs. 25 per month and, I might add, they deserve very much more.

9149. *The Raja of Parlakimedi:* They do not get any sort of allowance for taking up this duty? Does Government, in order to encourage the teaching of sericulture in schools, give any allowance to such teachers?—They are not being given any allowance so far; the experiment itself is new; Government are watching the results, I believe.

9150. Have you recommended the granting of such an allowance, or is it under your consideration?—This experiment is financed by the District Boards, and I am satisfied that they have given as big a salary as they can afford. The District Boards themselves have so many calls upon their purse.

9151. *Mr. Calvert:* In this printed note you have used to expressions, one of sericulture "supporting" families:—and another of sericulture being a "subsidiary industry". To what extent is it subsidiary and to what extent is it a sole support?—I could not give you the proportion; but in the vicinity of large markets and in areas where conditions are specially suitable to sericulture, it is the sole occupation; and I have enumerated in my note the conditions which favour that concentration of the industry as a sole occupation. I think in the Mysore district about a fourth of the silk produced is produced by people who practise the industry as a sole occupation.

9152. And three-fourths is subsidiary?—Yes, in the Mysore district.

9153. Are there any caste restrictions with regard to people who go in for cocoon rearing?—No.

9154. Do all people take part in it?—Some communities have sentimental objections and, in places where the industry has not penetrated, everybody has sentimental objections to some extent; but it is easy to overestimate the influence of that prejudice.

9155. Your better class Hindu cultivators will go in for silk-worm rearing?—The disinclination does not proceed on any caste basis. There are some communities which have a religious horror of taking life, the Jains for instance. I have never tried to induce a Jain to take up sericulture because he cannot do it without losing caste. In other communities there is less difficulty.

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9156. Now, these people who go in for sericulture as a subsidiary industry, are they tenants, small owners, medium owners, or big owners?—They are generally small holders of land either as owners or as tenants.

9157. Do tenants actually go in for sericulture?—Yes, the tenants here are in very many cases *kadim* tenants; generally the largest number of tenants are to be found in *inam* villages, and they have got a right of occupancy of land. Of course it requires some fixity of tenure to induce a man to put money into the soil; a tenant-at-will is not likely to plant the land with mulberry.

9158. The bigger owners do not go in for sericulture?—No.

9159. Are there any cases in which the bigger owners have grown mulberry for hire to tenants?—There have been a few cases but not many. The bigger owners generally are absentee landlords.

9160. I presume that the co-operative societies you have now, elect their own Chairmen and the committees?—Yes; they do.

9161. Their organisation is based on self-help?—Yes.

9162. The technical advice comes from outside?—Yes.

9163. Is the supervision of these societies done by yourself or by your staff?—By me and by my staff. I have got a man specially on this work.

9164. They are trained entomologists?—They are trained sericulturists; they have some knowledge of entomology, but they have specialised in sericulture.

9165. They know all about the silk-worm?—Yes.

9166. You are more or less under the Director of Agriculture?—Yes.

9167. But is there a separate Entomologist apart from yourself?—Yes, there is an Entomologist attached to the Department.

9168. For general work?—Yes.

9169. You are not under him?—No.

9170. Do the people who rear the worms do the reeling themselves?—Generally reeling is done by a different class of people.

9171. Do the co-operative societies so far extend only to the rearers, or are the reelers also in co-operative societies?—The rearers only, because the problem there is simpler.

9172. Is the reeling done at home or in factories?—It is sometimes done in the home; it is sometimes done also in what you may call a factory; there are a number of *charkas* set up in an open yard under the supervision of one man.

9173. Are the workers men or women?—They are generally men, but I have seen women doing the reeling also.

9174. Throughout the sericultural operation, the work is done chiefly by men and not by women?—I thought you referred to reeling, and I said by men generally. The rearing work is done by women and the reeling work mostly by men.

9175. Do the co-operative societies sell the cocoons?—They do.

9176. Do they do it by auction or what system?—Well, not exactly by auction. These co-operative societies at the time they distribute the seed to the members find out from the members whether they are going to sell the cocoons by themselves or whether they expect any assistance from the societies in the sale of the cocoons. Supposing the member wants the society's help, the society makes an estimate of the quantity of cocoons they have to find sale for, and they make a contract with the reelers; and as soon as the cocoons are ready they are made over to the reeler, who pays the market price for them.

9177. Do you find any difficulty in finding a sale for the cocoons?—Not recently.

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9178. Do the rearers get good prices compared with the Calcutta market?—I do not know about the Calcutta market for cocoons.

9179. Are the rates obtained on a fair level with the Calcutta price?—I think we get a better price here.

9180. *Professor Gangulee:* You do not compete with Calcutta?—No. We not compete with Calcutta, but the prices of our silk are higher than the prices of Malda silk.

9181. *Mr. Calvert:* You do not find a ring of purchasers boycotting you?—We have never had that difficulty.

9182. You are lucky. Then, there is no organisation linking up the rearers, the reelers and the weavers?—Only Government have such an organisation.

9183. You deal with the rearers?—With the rearers and the reelers.

9184. Weavers are quite separate?—Yes.

9185. Are they co-operatively organised?—There are a few weavers' co-operative societies.

9186. You mean silk weavers?—There is no exclusive class of silk weavers. Silk weaving is done by ordinary weavers, and there are a few weavers' co-operative societies; but my knowledge of the subject is not intimate enough to furnish accurate information.

9187. You cannot say whether there is any difficulty in disposing of the silk goods?—Woven fabrics you mean?

9188. Yes, the actual silk goods as woven?—I do not think there is.

9189. Is there any special tax on sericulture?—No.

9190. Is your department still dependent on trained men from Japan?—No.

9191. They have gone?—Yes.

9192. To what extent does the State aid the sericultural industry?—I have told you what the department is doing for sericulture. We furnish seed from our grainages.

9193. Nothing further than that?—We finance them; we administer the sericulture loans sanctioned by Government and we help them to find a market for their cocoons if they want that kind of help.

9194. You find no difficulty at all in finding a market for your cocoons?—There is no difficulty. Generally these cocoons are bespoken before they are harvested. When the worms promise well the reelers have a look at the village rearings and they make bargains in advance of the harvest.

9195. Reeling is a whole-time occupation?—Reeling in some villages is; in some villages they get a reeler from outside if they find that the price offered by the usual reeler is not good. The reelers generally go to the villagers and buy the cocoons, and it is a whole-time occupation with them.

9196. *Mr. Kamat:* For the success of sericulture certain climatic conditions are an important factor; is not that so?—They are.

9197. And next, after the climatic conditions, a certain amount of tradition in the matter of rearing of worms is also a very important limiting factor?—I would not call it a limiting factor; I would say it would help sericulture very much if there were a traditional sericulture in the particular place, but that tradition must be one of success and not of failure; if it was a failure it would operate in the opposite direction.

9198. You said before starting co-operative societies in a new area you would be anxious to see that there was this sort of tradition in the area; is not that the case?—Yes; before starting co-operative societies I would see that there was sericulture existing in the area.

9199. Bearing these important factors in mind, would it be easy in your opinion to introduce sericulture in certain parts of British India with which

you are conversant, as a spare-time occupation?—I do not know enough about the conditions in British India, and I think it would be rash on my part to make any statement.

9200. Was the Mysore State approached by any of the Provincial Governments of British India through their Directors of Agriculture, for assistance, say, for instance, for trained men to introduce this as a secondary occupation in British India?—Yes; the United Provinces Government approached the Mysore Government on the subject.

9201. Other Local Governments have not approached you yet, such as the Bombay Government or the Central Provinces Government?—No. I do not think that either the Bombay Government or the Central Provinces Government have approached us. I know we have done some work in this direction for the Madras Government, and the request of the United Provinces Government for assistance is under correspondence with that Government.

9202. The United Provinces Government is the only Government which has made an attempt so far to your knowledge?—I believe so, to my knowledge.

9203. Supposing an attempt were made, do you think it would be worth while to send out trained men to British India, and make a beginning by introducing sericulture there?—I think so. If all the conditions that I specify in my note existed in any part of British India, with suitability of climate, it would certainly be worth the while of British Indian Governments to see whether sericulture could be introduced there.

9204. You think it would be a feasible proposition for Local Governments in British India to approach the Mysore State for trained men for the introduction of this?—I do not know if the State has any trained men to spare, because our industry is growing and we have not enough workers as it is; but if we were given time I think we could train men. If the need of any British Indian Government was urgent enough we could lend the services of a man for a short period.

9205. But supposing you can spare the trained men, do you think it is feasible to make sericulture a spare-time occupation in British India?—I do not know enough about the conditions there. If the conditions were suitable the attempt would be worth making.

9206. *Sir Henry Lawrence:* In your note you say, "Large sections or communities have religious or sentimental objections to one or more stages of the industry"?—Yes.

9207. You have told us the Jains have such objection. What other large communities do you refer to?—Brahmins.

9208. *Sir James MacKenna:* Buddhists?—We have not a large Buddhist population.

9209. *Sir Henry Lawrence:* Is there any opposition on the part of Jains or Brahmins to the extension of your work?—No.

9210. They merely refuse to take it up by themselves?—They refuse to take it up by themselves, and amongst Brahmins I have found people who have no objection to the first stages of the operations, that is rearing of silk-worms.

9211. They do not attempt to prevent other sections of the population from taking it up?—They do not.

9212. You mentioned a resolution of the Board of Agriculture asking for protection. In what year was that resolution passed?—Last year.

9213. How much protection, do you anticipate, would be necessary?—The measure of it would be this; there is now a duty on foreign silk of 15 per cent., *ad valorem;* that is not sufficient protection, for it enables the foreign producer to undersell us, quality for quality. I would not say that the duty

should be prohibitive, for that would be starving our silk looms of their raw material. I would say it should be about enough to bring up the price of the imported material to the price of indigenous silk of similar quality.

9214. *Dr. Hyder:* Are you referring to silk yarn or silk piecegoods?—I am speaking of silk yarn.

9215. The duty on silk yarn is 15 per cent. while that on silk piecegoods is 30 per cent?—Yes.

9216. *Sir Henry Lawrence:* Do you ask for protection against both silk yarn and silk goods?—I am concerned mainly with silk yarn. I do not think that silk goods compete very seriously with the silk-weaving trade in India. But if it is considered necessary to raise the duty on silk goods also, correspondingly, I should have no objection.

9217. It is rather a question of what is your proposal?—My proposal is that raw silk here should be protected against raw silk coming in from outside India.

9218. Would you put on a duty of 100 per cent. or 200 per cent.? What is the amount that you have investigated and ascertained to be necessary?—I think about 25 per cent. would be a proper rate.

9219. You would raise it from 15 per cent to 25 per cent?—Yes.

9220. That would be sufficient protection for your industry?—I think so.

9221. Have you worked it out?—Yes, I have.

9222. Is the Mysore worm an indigenous worm?—It has become indigenous; I believe it came originally from China; there is a worm in China that is similar to the Mysore one. I got cocoons from Canton which were very similar to the Mysore cocoon.

9223. When did they come into Mysore? Hundreds of years ago?—About 100 years ago, I should think.

9224. *Dr. Hyder:* Was it not introduced by Hyder Ali and Tippoo Sultan?—That is the tradition, but I have recently had reason to doubt its correctness.

9225. Is not the silk industry chiefly in the hands of Mahommedans here?—A very large number of Mahommedans practise it, but I would not say it was chiefly in the hands of Mahommedans.

9226. *Sir Henry Lawrence:* You regard the Mysore silk-worm as the best in India?—The best multivoltine worm in India.

9227. I want to know whether it is considered better than the univoltine or polyvoltine?—It is the best worm in India.

9228. Is it suitable for other tracts than Mysore?—Yes.

9229. Is it suitable for the whole of India?—I do not know; I know that some very good crops have been taken with seed which I sent to the South of India, and which were reared under conditions very different from those which prevailed in Mysore; I know they have been tried in Bengal and reared very successfully; I do not know about other parts of India.

9230. Where has it been tried?—In Bengal, Cochin and Travancore it does very well.

9231. You do not know of any experiments that have been made with it in Bombay or the Central Provinces, or Upper India?—I do not know.

9232. Do you know if any experiments have been made in Kashmir?—I know that experiments have not been made in Kashmir.

9233. *Dr. Hyder:* Have you been supplying your seeds to Baluchistan?—No.

9234. *Sir Thomas Middleton:* In the statement which you have put in you say that the increase in the output of silk in the last eight years has been about 50 per cent. Is this increase mainly due to an extension of area, or mainly due to improved methods of cultivation?—It is largely due to exten-

sion of area, but it is also partly due to better seed and better rearing methods.

9235. In the same period the receipts from silk exported from Mysore have increased from 27 lakhs to 87 lakhs. What proportion of that increased receipt is likely to have reached the producer of silk?—I have said that the rearer gets only a very small share of the profits of the silk industry.

9236. You cannot give us any idea as to what percentage of the increase he is getting?—I have not worked it out. I could give you the figure if I had time.

9237. You think it is going mainly to the weaver?—It is going to a number of persons who have not earned it, to the man who lends money to the rearer, to the man who reels the cocoon, to the *sowcar* who buys the silk from the small rearer, and a good deal of it goes to the broker.

9238. Between 27 and 87 lakhs there is a good deal of money to be accounted for, and one would hope that some of it, at least, reaches the producer?—Naturally, otherwise there would be no expansion of mulberry cultivation.

9239. You have told us already that about one-fourth of the industry is a whole-time industry, and about three-fourths is part-time. What is your policy? Are you aiming at extending the part-time industry or the whole-time? Which would you like to see developed?—The part-time industry.

9240. Do you regard the whole-time industry as a somewhat risky one?—Yes, there are risks, unless the conditions are absolutely favourable. I have said in my note that it is more susceptible to variations in conditions than the part-time industry.

9241. In your memorandum I notice a statement new to us, that the students trained have invariably settled down on their own lands?—Yes.

9242. That is your experience here?—Yes, that has been my experience. I find it difficult to get recruits from among the trained people, because they prefer to do business on their own account.

9243. That seems to indicate that silk culture is fairly profitable?—It is, certainly.

9244. At any rate, it pays better than Rs. 25 per month as a teacher; is that the inference?—It very largely depends on the person.

9245. *The Chairman:* You gave us an estimate of the net profit per acre of silk-worm rearing as a part-time occupation. Can you give us an equivalent estimate of its net profit per acre as a whole-time industry?—More capital comes into the business when it is a whole-time industry. The profit depends upon whether the mulberry is grown as an irrigated crop or as a dry crop. I would put the figures at about one and a half times the return from sericulture practised as a part-time industry.

9246. Is that deducting the value of the labour of the family carrying on the industry?—Yes; where it is practised as a whole-time occupation I would deduct all that in working out the net result.

9247. The increase being due to the fact that it becomes a 12 months' occupation instead of an occupation carried on during the slack seasons so far as agriculture is concerned?—That is so; it becomes the sole occupation of the entire family, and the cultivator puts his other resources into it also.

9248. How many crops does the part-time man produce?—There is no difference in the number of crops; the only difference is in the volume. *

9249. *Mr. Calvert:* Are the reelers separate from the rearers?—Yes.

9250. Could you give us any indication of the amount of wages earned by a reeler?—There are two kinds of people employed in reeling; one is the man who actually feeds the threads, that is the reeler. There has also got to be a turner; the turner is paid about 3 annas per day; it is generally a

* See Appendix II.

boy, and I have also seen women employed in that work; it is not very strenuous work. The man who feeds the cocoons or the reeler, I mean, gets 8 to 10 annas a day of 9 hours' work.

9251. *Professor Gangulee:* Most of the silk is exported from Mysore to British India, not overseas?—Yes.

9252. What percentage of it is consumed in the State itself?—About 30 per cent., of the silk produced in the State is consumed in the State.

9253. Is it converted into silk-cloth?—Yes.

9254. And 60 per cent goes out?—It goes to South India.

9255. Not to any other part?—Mostly to Southern India.

9256. If the silk trade is a profitable one, you anticipate a time when this 60 per cent will also be consumed in the State?—I should not like the State to use all the silk that it produces, for it is a poor State and silk is an article of luxury. I should like rich parts of India to buy our silk and send us the money.

9257. Is it likely to develop as a factory industry?—Rearing, no; reeling, to a certain extent.

9258. Reeling is done in Japan on a factory scale?—In Japan also a good deal of reeling is done in cottages.

9259. Silk-worm rearing is done in Japan in villages but reeling in factories, and Japan is competing with the whole world?—That is so.

9260. Do you find a tendency here for it to be put on a factory basis?—I see the tendency but as yet it is in its beginnings. We have evolved from the individual reeler with his single *charka* to 10 *charkas* working in the same place; of course, that requires a capitalist. Recently, we have had a filature started. I think it will have a great influence on the improvement of reeling, but our main problem is to see that cottage reeling will flourish.

9261. You stated in reply to Sir Henry Lawrence that some Brahmins had no objection to the rearing of silk-worms?—They have no objection to rearing.

9262. Do they object to killing?—They do object to killing.

9263. *Sir Henry Lawrence:* I do not quite understand that. What do the Brahmins object to?—Stifling the cocoons and killing the worms. They do not object to feeding them on mulberry leaves.

9264. *Professor Gangulee:* And then selling them to somebody?—Yes.

9265. Then the other people kill them?—Yes.

9266. *Sir Henry Lawrence:* But do they not object to the rearing of the silk-worms when they know that the worms are destined to be killed?—There are no very serious practical results from such objections, though they might possibly cause some qualms of conscience.

9267. How many acres are usually devoted to this industry by the man who adopts it as a full-time occupation?—All the land that he has got; generally about 4 acres.

9268. And on that land he gets one and a half times the profit of the man who carries it on as a part-time occupation?—Yes.

9269. When carried on as a whole-time occupation it yields Rs. 300 an acre?—Yes.

9270. So that he makes Rs. 1,200 from his 4 acres?—Yes.

9271. As net profit?—As net profit. I am not deducting the cost of living from that.

9272. That is not net profit?—It is not net profit; it is the profit of the business. Of course, that it what he keeps with himself; it does not include the cost of his household, and he also works at it. I have not included the cost of his household, but I have included the cost of the labour he employs, the manure that he uses, the appliances, the seed and that kind of thing.

9273. Do you include the man's own labour?—I have not included the labour of the family; it is the remuneration for the labour of the family in fact and the return from land combined.

9274. Is your comparison on all fours? As I understand, in the part-time industry you have excluded these charges but in the whole-time industry you have included them; is that so? I understood you to say that the part-time sericulturist makes Rs. 200 an acre?—In neither case did I include the cost of living of the family.

9275. *Dr. Hyder:* There is no exemption from land revenue on such crops as mulberry plantations?—No.

9276. All these mulberry plantations have to fear the assessment?—They have to pay the assessment fixed for the land.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Saturday, the 13th November, 1926, at Coimbatore.

[*Extracts from Mr. N. Rama Rao's letter, dated Mysore, the 14th December, 1926.*]

APPENDIX I.

I give below the work done by the Managing Committees of Sericultural Co-operative Societies (which are elected by the members), and the assistance rendered by Government Departments.

Work done by the Society's Committee.	Work done by Government Departments.
(*i*) They ascertain the requirements of members for seed, and send out agents for buying seed cocooms to seed centres, often at some distance.	(*i*) The Sericultural Department places them in touch with recognised seed cocoon rearers, and help them to secure good bargains.
(*ii*) They arrange for cellular examination of moths, so as to obtain disease-free eggs, doing such preliminary work as pairing and segregation in cellules.	(*ii*) The Sericultural Department sends down a man with a microscope for examination.
(*iii*) They hatch the eggs under the supervision of their most expert member and distribute young worms, after rearing through the first two stages.	(*iii*) The Sericultural Department disinfects the nursery.
(*iv*) They receive loan applications, investigate the *bonâ fides* of the applicant, and grant loans.	(*iv*) The Sericultural Department deputes a man to watch the rearings of the members, and give them advice.
(*v*) They grant time for repayment when necessary.	(*v*) The Co-operative Department audits their accounts.
(*vi*) They invite deposits, borrow money, and do such acts as may be necessary for providing themselves with funds.	(*vi*) The Co-operative Department lends them money out of an allotment made by Government for the purpose.
(*vii*) They obtain for members the advice and guidance of the department.	
(*viii*) They obtain for members mulberry leaves, or worms, as may be necessary whenever members have not enough or more than enough leaves for their rearings.	
(*ix*) They take the responsibility of marketing or reeling the cocoon crop of the members.	

It will be seen from the above that the Co-operative Societies manage their own affairs pretty completely, and that we do not spoil them with too much control.

Mr. N. Rama Rao.

APPENDIX II.

The figures I gave regarding the profit from sericulture practised as a part-time industry, *viz.*, Rs. 200 per acre per annum on dry land and Rs. 300 per acre per annum on irrigated land, are correct.

My view is that the income from sericulture as a whole-time industry is about one and a half times as much as that from the part-time industry—which is to say, that it is about Rs. 300 per acre per annum on dry land, and about Rs. 450 per acre per annum on irrigated land.

In arriving at the figures, I have deducted from the gross returns all items of money expenditure, such as cost of manure and seed, wages extra labour employed, and land revenue. I have not deducted the cost of the home-labour devoted to the industry. This, in the case of part-time sericulture, is labour most of which would otherwise go to waste for lack of employment; in the case of the whole-time industry, it is the whole of the labour of the family.

In the latter case, the return not only includes the results of the labour which would otherwise go unemployed, but also the wages which the adult males would have earned if they had not taken up sericulture as a main industry. It is to be noted that the whole-time worker also spends more money on cultivation.

I append a tabular statement (below) which I hope will be found to give clearly the details required by the Commission.

Statement showing the profit derived per acre, per annum, from Sericulture, practised as (1) a part-time industry, and (2) a whole-time industry.

	Part-time.		Whole-time.	
	Dry Land.	Irrigated Land.	Dry Land.	Irrigated Land.
	4 to 5 crops are taken per year. 3 crops each of 350 or 400 layings of eggs. 2 crops of 200 layings. Total production—about 500 lbs. of cocoons (20 maunds of 25 lbs. each).	6 to 7 crops. Total quantity reared about 4,000 layings. Pruning after every 3 crops with manuring. Total production about 1,200 lbs. of cocoons (45 to 48 maunds).	4 to 5 crops are taken per year using about 2,500 layings (3 crops of about 650 layings each and 2 of about 500 together). Production 875 lbs of cocoons.	6 to 7 crops. Total quantity reared about 4,000 to 4,200 layings. (2 crops of about 800 layings each and 1 of about 400 layings. Then pruning, digging and heavy manuring. Again a similar succession of crops. The 7th crop if any is much smaller about 200 layings). Production about 1,500 lbs. of cocoons. —Value Rs. 720.
Value	Rs. 240	Value about . . Rs. 540	Value about . . Rs. 420	
Expenditure.	Rs.	Rs.	Rs.	Rs.
(i) Manure—10 cart loads	8	30	30	60
(ii) Labour—				
Weeding	5	40	20	50
Gathering leaves	15	30	25	35
(iii) Seed	15	40	20	40
(iv) Land Revenue	2	10	2	10
(v) Contingencies	5	10	20	20
(vi) Irrigation	...	70	...	80
	50	230	117	295
Net return	190	310	303 Say 300	425

Saturday, November 13th, 1926.

COIMBATORE.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E., C.B.

Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.

Sir JAMES MACKENNA, Kt., C.I.E., I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja SRI KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU, C.S.I.
Rao Bahadur B. MUNISWAMI NAYUDU GARU.
(*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH.
(*Joint Secretaries.*)

Mr. RUDOLPH D. ANSTEAD, M.A., C.I.E., Director of Agriculture, Madras.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH (*a*) (*i*).—Research must always be very largely a provincial concern because it must deal with local problems. India is such a vast country and conditions differ so much in different parts of it, that very few problems are general and very few agricultural practices can be applied to the whole of India. Even in the Madras Presidency itself the conditions vary enormously. It is for this reason necessary for each Province to have its own research department to deal with its own special problems. A Central Research Institute like Pusa has only a limited value to Madras. The main crops in which we are interested are not grown at Pusa at all. It is only very general problems, such as those of the fundamentals of soil physics and chemistry, mycology, entomology, etc., which can be tackled at Pusa with benefit to the Provinces.

2. In considering the question of research it is necessary to distinguish between what may be called fundamental research and applied research.

3. Fundamental research should be the main concern of a Central Research Institute like that at Pusa, the application of the discoveries made there to local problems, which often requires additional research, must always be the task of the Provincial Research Institutes. There are many problems which involve no new scientific principles, but rather the diagnosis of the local conditions. Once these have been analysed the application of the main principle is obvious.

4. To illustrate what I mean, take the case of soil physics, a subject which has hardly been touched as yet in India. The Central Research Institute should attack the problem along its broad lines while the Provincial Research Institutes should follow it up as related to their own soil types and climatic

conditions. To do this organised co-operation is needed both to plan out the general campaign and to keep the provincial research officers in touch with the discoveries made by the central research officers, and there should be frequent intercourse and discussions between the two groups of officers so that side-lines of local interest may be followed up.

5. At present there is little or no organisation for this to be done. The same thing applies to all the big fundamental subjects of research whether, they be chemical, entomological, mycological, or bacteriological. To take another example, Dr. Hutchinson's work on the effect of sulphur bacteria on making phosphates soluble in composts was a fundamental problem and is capable of infinite development in the Provinces under different local conditions. Yet there is no organisation for following it up and Provincial Agricultural Departments have done so or not just as they pleased, and where they have done so, have not kept in sufficient touch with the Imperial Bacteriologist to make the fullest possible use of his experience and advice on the one hand, or with other Provinces which may be working at the same problem.

6. I am therefore in favour of both a Central Research Station and a Central Advisory Board to act as an advisory body to the Provinces and afford them help when necessary both with men and advice.

7. It may be necessary for this Central Research Institute to carry out its investigations on fundamental problems, not at Pusa but in a Province. This has already been recognised since the Imperial Department have established their Sugar-breeding Station at Coimbatore, their Animal Nutrition Station at Bangalore, and their dairy schools at Bangalore and Wellington in this Presidency. The same idea is being followed by the Indian Central Cotton Committee who have decided to undertake research on the boll shedding of cotton. This is a fundamental problem in which all cotton-growing areas are interested, but the original work is to be done at Coimbatore by the Committee's research officers.

8. What I should like to see is an organisation on the lines of the Indian Central Cotton Committee with funds at its disposal to study all crops. Such an advisory and controlling body on which the Provinces, the firms, the landholders, and in fact all those interested in agriculture should be represented, could do an immense amount of good and afford very valuable help to the Provinces. Provincial research could be strengthened and helped financially and supplied with research officers if need be, and big problems tackled under the guidance of an advisory committee. At the same time the Indian Central Cotton Committee should not be disturbed and it should be left to deal with cotton.

9. It is also very necessary to rouse the interest of all those who are connected with agriculture in the research which is being done. It is they who will have to apply the results. Not only the ryots and the landholders, but also railway companies, shipping lines, and firms must be interested and a central organisation of the kind suggested whose conferences their representatives may be invited to attend is the best way of rousing the interest of such bodies.

10. I feel very strongly that greater facilities should be given to research officers from the different Provinces working on similar subjects to meet one another. Before the War, a few sectional meetings were held in the years in which the Board of Agriculture did not sit. These meetings were very beneficial and helpful. They were dropped on grounds of economy. Such meetings should be held frequently and research officers should be freely deputed to attend them and Directors of Agriculture should also attend such meetings. In this way, greater co-operation and co-ordination would be possible. It often happens now that the research officers and Directors in one Province do not know what their "opposite numbers" in other Provinces are doing and this leads to unnecessary duplication of work and other evils.

11. At the risk of being tedious I should like to give one example to illustrate my point. I am particularly interested in "artificial" farmyard

manure as there would appear to be great possibilities of developing this source of organic manure in this Presidency where large quantities of waste material are available, and I should like to know just what has been done in other Provinces, their difficulties and successes. It was only when I met my fellow Directors at Simla last June—where I went for quite another reason be it noted—that I was able to collect this information. It should be obtainable in ready form through a central committee where Directors can meet frequently.

12. Provinces must issue their own literature in the form of leaflets, etc., dealing with local agricultural problems in the local vernaculars, but a great deal of information, both general and particular, could be issued by the central committee. At present the results of provincial research are issued in the form of Pusa bulletins, but these are too technical for the general public, while the *Agricultural Journal of India* does not reach a sufficient number of the general public. I would advocate the appointment of a special Publicity Officer attached to the central committee, a man with the knack of journalistic writing, whose duties would be to translate, so to speak, all bulletins, etc., into simple language and distribute regular articles to the Press all over India, even to small local papers, if necessary, in the vernacular. I feel that the general public do not know enough of what the agricultural departments are doing. It was for this reason, at the advice of Lord Willingdon, that this department issued its Popular Account of the work of the department and publishes monthly a Digest which is a running account of its operations. Since this has been done there has been much less criticism of the department due to ignorance and misinformation both inside and outside the Legislative Council and I think that we are in closer touch with the agricultural public than we used to be.

13. There is no lack of problems which await research when men and money can be found. In Madras, the special problems which need intensive study at the present moment are:—

(1) Oil-seeds and pulses—These crops need study along the lines which have been adopted with paddy and sugar and cotton, and more recently, millets.

(2) Fodder crops—An agrostologist is needed to study the whole question.

(3) Soil physics—a question which has not yet been touched in this Presidency and which it is closely bound up with.

(4) Agricultural engineering—a study of local implements with a view to their improvement.

Provision was at one time made for all the above research officers in the Madras Agricultural Department, but these posts have not been filled for lack of money.

14. As regards men for research work, I do not think that really suitable men can be found as a general rule (of course there are exceptions) in this country and it is necessary, in the first place, to recruit European research officers to start the work and train their own Indian assistants who can ultimately take their places. This has been done in the past with success.

15. The best method of recruiting Indian research officers is to first train assistants under a European officer and when they have been in the service for some years to pick out likely men who show talent and send them to England for special training and then bring them back to take charge.

16. In this Presidency, this has been done in the case of the Paddy Specialist and I am convinced that it is the best method and will give better results than recruiting men who have gone to England on their own account and taken an ordinary college course there. We know nothing about the ultimate suitability of such men as research officers.

17. I do not agree that sufficient training for research officers who are to hold high posts and organise and control research in the future can be

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given at Pusa. It is necessary to send such officers to be trained at Rothamsted, and elsewhere, under the very best authorities and it is useless to send men for such training till we are first sure that they are likely to be what we want and until they have a preliminary grounding in the work to be done on the spot.

18. With regard to provincial research on crops and plant-breeding, the following progressive policy should be followed:—

(1) Appointment of an expert botanist and plant breeder who will examine the crop, its distribution and possibilities and plan a campaign.

(2) Establishment of a central breeding station at the Research Institute with necessary laboratories and equipment and staff of assistants and plant collectors.

(3) Establishment of sub-stations in the main areas devoted to the crop for the evolution and testing of special strains to suit local climatic and soil conditions and special markets, with the necessary equipment and staff. The subordinate staff to these sub-stations must be appointed at least a year ahead of opening the station so that they may be trained at the central station.

(4) Intensive study of manurial and irrigation problems connected with the crop.

19. This policy has been accepted in this Presidency and is being followed Research on paddy has reached the third stage above and is just entering on the fourth stage. Research on cotton has reached the second stage. Research on millets has reached the second stage and the third stage is now being considered. Research on sugar has been complicated by the work having hitherto been done at Coimbatore by the Pusa staff. It may be said to be now in the second stage only. Other crops like oil-seeds, fodders, etc., have not yet been attacked.

QUESTION 2.—AGRICULTURAL EDUCATION.—It must be admitted that all forms of agricultural education so far tried in this Presidency have resulted in failure. Students who come to the Agricultural College at Coimbatore do so with one object in view and one only, *viz.*, to obtain a post in Government service. If they do not obtain such a post they look on it as a grievance.

2. As far as possible care is taken to accept only such students as come from the agricultural community and those who have lands of their own or who will have lands and several different courses have been tried and constant changes made, but the result is the same. A two years' course of practical agriculture designed to teach farming had to be abandoned because it failed to attract any student once they find that this did not lead to Government service.

3. I think that it must be admitted that at present there is no demand for agricultural education for its own sake and that there will be no such demand until present conditions change very considerably.

4. An experiment has been tried in the Presidency with two agricultural middle schools where a two years' practical course is given in the vernacular. These, however, have not really been a success. A certain number, about 15 per cent, of the boys who have undergone the course have returned to their lands, but it is difficult to find enough students to keep the schools running and one will probably have to be closed at an early date for lack of students.

5. I am strongly opposed to all ideas of trying to teach agriculture in primary schools or of including it as a vocational subject in high schools. Agriculture is a technical subject which can only be taught in a special technical school to which a farm is attached. Small children cannot be taught practical farming. Up to the age of about 12 or 14 boys should have a literary education supplemented by " Nature Study " and after that they may be taught practical farming and special technical schools equipped with a farm.

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6. A great deal more might be done in teaching nature study in primary and middle schools. The majority of Indian children are hopelessly ignorant about natural objects and processes going on around them. Could their knowledge of nature be increased it would help the Agricultural Department in their propaganda work. To take one instance only: The average ryot looks on a caterpillar which eats his crop as a complete entity and he has no conception that it has any connexion with a moth or butterfly. When the rains come the pest just disappears or appears as the case may be and he does not know why—it is a plague sent by the Gods. If we try to demonstrate a control method which involves the catching of moths, he fails to see any connexion and is not interested.

7. Could children in schools be taught nature study such difficulties as this would disappear. Nature study, to be successful, needs enthusiastic and knowledgeable teachers more than text books, the fields and the insects, etc., are the text book. In connexion with nature study, the school garden has a useful place. At present it is too often made as abortive attempt to teach horticulture which is styled " Agriculture " and the result is beneath contempt.

8. The " agricultural bias " in rural schools of which so much is heard could be obtained by teaching nature study if this subject were really well taught, and this, and a literary education of a general kind is all that should be attempted up to the high school stage.

9. Agriculture is not suited to " vocational " treatment in a high school for several reasons, the chief of which is that it is not a class-room subject which can be taught from a text book; it can only be taught on a farm. The difficulty and expense of attaching a farm to all high schools must be obvious. In the next place even if a farm is attached to the high school insufficient time can be devoted to agriculture. The boys are taken away to attend other classes at a time when they should be on the land. It is essential that every operation needed to raise any particular crop should be conducted by the boys themselves, they must not see it done only or be told about it, they must carry it out with their own hands. Such agricultural operations cannot be fitted into a time table such as schools delight in of so many hours a day at certain specified times. The time comes when the whole day must be spent in the fields ploughing or weeding or harvesting and these times cannot be predicted and put into a time table since they are dependent upon climatic factors. Then on the other hand there are times when no work can be done on the land. It is therefore necessary that any course in practical agriculture should be designed entirely on its own and it will not fit in with other courses. Hence the necessity for the special technical school for teaching agriculture in which this is the main subject and all other subjects are subsidiary to it and if they are taught at all they must give way to field work and only be engaged in when suitable occasions arise and the students can be spared from the land.

10. At a stage about Form IV the boys should have a choice of going on through the normal high school course leading to the University and a professional life or of going into special technical schools to fit themselves for an agricultural or industrial career. A number of such schools would have to be established. Those designed to teach agriculture will be equipped with farms and the course of instructions would be along strictly practical lines and given in the vernacular. A minimum of pure science would be taught just sufficient to explain the processes being carried out in the field. The teachers at these schools would have to be trained in an agricultural college and to hold an agricultural degree and the courses should be introduced by the Agricultural Department.

11. Such a training would not fit a boy for Government service or for a clerk's post and he would have to return to the land.

12. I am told that, were this scheme adopted, the technical schools would remain empty and that every boy, when it comes to the parting of the ways at Form IV, would choose the high course and the road to the University. If this is so, it simply means that there is no demand for an agricultural educa-

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tion and that demand cannot be created by Government. It will only come when it has been sufficiently proved that the road leading to the University and the overcrowded professions usually leads to unemployment and starvation. When that lesson has been sufficiently learned, the technical schools will come into their own and farming will become popular.

(*ix*).—In England it was the gentlemen farmers who built up the agricultural industry but this is not the case in India. The big landholders here do not co-operate in the cause of agriculture and cultivation is always better in ryotawari areas.

2. One reason probably for the unpopularity of an agricultural life, which is by no means confined to India, is the dullness of the village, socially and intellectually, to a man who has had some education and a taste of the town facilities, and has learned that there is something better. I believe, therefore, that one of the ways to make agriculture more attractive to the educational youths is to improve the conditions of village and that bodies like the Young Men's Christian Association could probably be very helpful. What is needed is a few public spirited young men to make up their minds to improve the village, to start a social club, to take up the teaching of health and hygiene, to found a library and generally to take the town facilities to the village. In fact, agriculture as a profession is not likely to become popular till the Indian youth has learned a spirit of citizenship and any movement which tends to teach this should be encouraged.

3. The betterment of the economic and social conditions of the villages will do more to stop the present drift to the towns than any system of agricultural education. It is the educated men who do not like agriculture and who go to the towns. The village panchayats should be strengthened and the old village organisations reconstituted. These should give opportunity for public spirited educated men to do good work in villages.

(*x*).—The problem is both of recent date and complicated. Before the unsettling influences of English education, every young man found his calling determined for him by his elders or by the custom and tradition of his caste. Cultural education had no money value and was not sought after, except by a few. Practical agriculture, as the main industry of the population, held the loyal allegiance of youth and age. The practice of agriculture was, of course, developed to a greater extent than the theory or science. The various incidents of agricultural and allied work came to be specialised as the work of certain families and the village, in its economic aspect, was very largely a self-contained whole. The life of the individual was naturally cramped (i) by the joint family organisation and (ii) by the absence of scope for ambition and initiative. English education afforded careers to the individual. At first, such careers were assured; then the sight of a few dazzling prizes made the multitude freely bet on the gamble of English education, until to-day the "unemployed" problem among the intelligentsia calls for urgent solution.

2. To make agriculture attractive to half-educated youths by offering land or money inducements is neither necessary nor feasible. Under the joint family system and the traditional village economy, the ownership of broad acres is as much a trust and responsibility as a sign of individual prosperity. Leaving out of account the middle class youths who are out of the village for education, there are still as many men as the land can support, and more, to look after agriculture in the village. If they put energy and money into their work, they can achieve a great deal. Moreover, the restless and ambitious educated young men will not ordinarily be satisfied with the humdrum village life. The alumni of agricultural colleges hardly take kindly to agricultural pursuits, whether they come from agricultural classes or otherwise; they are ambitious to earn their best and to earn for themselves and they would leave to brothers or uncles the task of extracting yields from their small joint properties. The extra profit yielded from putting their brains into the family holding is hardly felt as sufficient recompense for the loss of a career, in which

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they can live for themselves, a career for which they fitted themselves after an expense, which, according to Indian conditions and ideas, is substantial.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(a) The measures which are adopted in this Presidency for influencing and improving the practice of cultivators are as follows. When research, followed by trial on an experiment station, has shown that any particular practice is an improvement over local methods of agriculture, it is brought to the notice of the ryots by means of demonstration plots. Likely ryots in the localities concerned are picked out and persuaded to try the improvement on a small portion of their land. When new things such as seed, manure, or implements are concerned, these are given free (in the case of implements loaned) in the first place. The improvement in question is carried out under the supervision of a district officer, known as an Agricultural Demonstrator, and a cultivation sheet is kept, that is to say, a profit and loss account, in which all expenditure is noted, the ryot himself supplying the data. Attempts are made to carry such plots to a final conclusion, the crop is harvested and weighed and valued. Side by side with the demonstration plot is another on which the local method is carried out, the cost of this finding its place in the cultivation sheet also. Thus, at the end, it is possible to see the exact monetary gain to be secured by the adoption of the improved method. As far as possible, these demonstration plots are laid down in conspicuous places, *viz.*, public roads, near villages, etc., so that as many people may see them and discuss them as possible, and they are marked by a flag or some such thing to call the attention of the casual passer-by to them. This method has been found satisfactory for several reasons. The ryot sees the improvement advocated carried out on his own land, in fact he does it himself, and this disabuses his mind of the idea that he cannot do on his land what is done on a Government farm, that on the latter some secret nostrum of which he is not told is used, or that the farm soil has some special inherent fertility. Also it removes the fear that Government have some ulterior motive in wanting these improvements carried out. He actually sees the result both in crop and money and reaps the benefit. When the demonstration is successful he is quick to adopt the improvements for himself and his neighbours will follow his example. In this way his confidence is gained and by beginning with simple improvements, like a reduced seed-rate and economic transplanting of paddy, for instance, which cost nothing, he can be gradually led to adopt other improvements which may cost money to carry out, such as the use of iron ploughs or the application of artificial manures.

2. These demonstration plots have proved successful and popular and there is a growing demand for more of them. Some 600 of them exist scattered up and down the Presidency and the main things being demonstrated are the following:—

(a) *Paddy.*—Reduced seed-rate followed by economic transplanting; use of improved strains; cultivation with iron ploughs; growing green manures; applying bonemeal with green manures; application of manures like sulphate of ammonia and superphosphate in conjunction with cattle manure.

(b) *Sugarcane.*—Line planting, trenching, wrapping, propping; use of improved varieties; application of manures like poonac supplemented by sulphate of ammonia; improved methods of making jaggery, use of an improved type of furnace, iron mills, etc., use of iron ploughs for preliminary cultivation.

(c) *Cotton.*—Use of improved strains; drill sowing; intercultivation with bullock-drawn implements; conservation of water; application of manures; clean picking.

(d) *Coconuts.*—Introduction of dry farming methods of intercultivation and planting.

(e) Demonstrations of methods dealing with pests and diseases.

(b) The limiting factor is men and money. These plots need the constant attention and supervision of the Agricultural Demonstrators, both to see that the necessary operations are carried out at the right time, and to sustain the

necessary interest of the ryot at the early stages. It is not always possible to bring the demonstration to a final conclusion at harvest time, but as many such results as possible are obtained. At present there are not enough Agricultural Demonstrators to supply the needs of the Presidency, each has a jurisdiction of two taluks, sometimes more, and there are large areas as yet untouched. The ideal is to have one Agricultural Demonstrator and two demonstration maistries to each taluk, and this should be worked up to as rapidly as possible. The Agricultural Demonstrators are men who have undergone a course of agriculture at the Agricultural College at Coimbatore.

2. In addition to the above, we have a few large demonstration plots, which we call demonstration areas. This is, at present, an experiment. It is an acceptance of the challenge that what the department teaches is not adapted to practical farming, and that what may be demonstrated on a small plot is not necessarily successful on a larger area. Areas of about 10 acres have been taken up on ryots' land and here half the land has been devoted to our improved methods, and compared and contrasted with local methods carried on on the other half. So far, the results have been very encouraging, but there is insufficient staff to enable us to have many of such areas.

3. In addition to this, a vigorous propaganda is carried out. Advantage is taken of as many fairs, festivals, etc., as possible to hold small agricultural exhibitions, to give lantern lectures, spraying and ploughing demonstrations, etc., and to distribute literature. In one place, we have even organised a ploughing competition and we are constantly on the look-out for new methods of getting hold of the people.

(*c*) Given men enough of the right kind for Demonstrators there is no particular difficulty in getting ryots to adopt expert advice, provided that it does not imply the expenditure of anything but a small sum. The ryot is very shrewd and is quick to take advantage of a real improvement once he has been shown it on his own land.

2. Attempts are being made to get co-operative societies to take up demonstration plots and areas and to run them for the benefit of their members, and to supply the members with necessary loans to enable them to purchase implements and manures. A few societies are doing this very well indeed, but there is a great tendency for the society to want the Agricultural Demonstrators to do all the work, and Government to bear all the cost. This is not possible or advisable and considerable improvement might be made along these lines by co-operative societies formed for the purpose.

3. It is often suggested that more use might be made of the cinematograph for propaganda work, but the difficulties in the way of this at present are to my mind insuperable. A projector is a difficult thing to handle if it is carried about by unskilled demonstrators. The main trouble, however, lies in the production of the films. Any one who has had anything to do with this will at once realise that a good film must be " staged " most carefully by trained actors. Attempts to fill an ordinary operation as it is performed in the fields give only poor results of little or no educative value. This difficulty has, I believe, been realised by both the staff at Pusa and by the Railway Companies who are trying to produce films. A great deal of harm may be done by the use of a bad film which does not show the improvement it is wished to advertise very clearly, as it will appear to be a difficult or even foolish operation.

(*d*) Many striking instances can be given of the success of demonstration and propaganda work, but the following two examples must suffice. The first relates to the introduction of the *sindewahe* furnace with a thin pan for the boiling of cane juice to make jaggery. This furnace is so designed that it needs no fuel beyond that supplied by the megass and trash. Hundreds of these furnaces have been introduced and in many districts they have revolutionised the sugarcane industry and it has been started in places where it had disappeared on account of the cost of firewood. For instance, in the Chittoor district in 1921 during the cane milling season it was usual to see hundreds of cart-loads of fuel coming in from the forests every day to supply the furnaces. In that year the Agricultural Department first began to demonstrate the im-

proved furnace and now one sees no stacks of fuel, but only the chimneys of the furnaces of which 710 are at work. The saving to the ryots is anything from Rs. 50 to Rs. 100 per acre depending on his distance from the forests. Round Coimbatore during the cane milling season the chimneys of the sindewahe furnaces are quite a feature of the landscape.

2. The second example I have chosen is a demonstration against a disease known as "Mahali" of the Areca Palms on the West Coast. This disease is caused by a fungus which attacks the fruit and it can be prevented by spraying the bunches of fruit with Bordeaux Mixture just before the monsoon rains. This method has been steadily demonstrated on all possible occasions for the last four or five years and a vigorous campaign carried out with the help of the co-operative societies, and last year 13 lakhs of trees were sprayed largely under the guidance of departmental officers and wholly as a result of our propaganda work. The work can now be safely left to the garden owners themselves all of whom know what to do.

3. Other examples of successful propaganda work could be given, but the above must suffice.

4. As regards failures, these also exist, and they are largely due to the fact that the improvement advocated is costly or implies a good deal of trouble, such for instance as the preservation of cattle manure by the loose-box method which is not popular with ryots.

5. The remedy is two-fold, more demonstrators so that more particular attention can be devoted to the special point (naturally Agricultural Demonstrators push those improvements which are most popular and hold out most promise of success) and more search to devise better methods which will remove the particular prejudice the ryots may have.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (1) The main causes of borrowing are:—(*i*) *Among the middle classes.*—False standards of life. I am all for people spending more for real comforts and raising their standard of living; but *false standards* lead people generally to the imitating of richer folk at wasteful expenditure on marriages, etc. Education has contributed its share in piling up debt. And once in debt, a ryot rarely gets out of it, as the rate of interest he pays his creditor is usually thrice the net yield on land of the same rupee value as his debt. The ryot does not sell a slice of his holding—it is derogatory to do so—and sentiment is against it. The debt goes on doubling every seven or eight years until the inevitable crash comes.

(*ii*) *Among the poor.*—Drink is a powerful factor in keeping the depressed and the coolie where they are.

(*b*) Special measures to rehabilitate the indebted ryots and to prevent his land being auctioned by the moneylender seem to be urgently needed. The creation of Land Mortgage Banks under Government auspices seems to be the only hopeful remedy for the evil, which in certain districts has assumed large proportions. Loans might be issued in the same way as *taccavi* loans and at the same rate of interest and on the same kind of security and made recoverable in instalments as *kists* under the Revenue Recovery Act, extensions of time being given in bad seasons.

2. In a wet village, all the principal landholders, except four or five, are more or less in debt, having borrowed at nine per cent or more from Chetti moneylenders. Many neglect to pay even interest, and by such default have been getting deeper and deeper into debt. Of the few who are without debt, half owe that position to their being engaged in professional careers.

3. The scheme would require preliminary financing which may, for instance, be provided by the people themselves as, *e.g.*, from postal savings bank funds or cash certificates; there would not be much recurring expenditure as there would be as steady inflow of instalments year after year. There would be no

resort to courts and no terrors of the law and the extra work to the Revenue Department can be met by an increase of staff.

4. To prevent unnecessary resort to such help, help might be restricted to cases where the debt exceeds a certain multiple of the *kist* on the holding.

5. At present a large proportion of the net earnings from agriculture goes to the moneylender and the ryot in debt is in a position of unstable equilibrium. Under the State Aid Scheme, stability will be restored to the ryot, and a smaller proportion of the net earnings will be devoted to the payment of interest.

QUESTION 8.—IRRIGATION.—More attention should be devoted by the Irrigation Department to minor works and the keeping in repairs of existing tanks and channels, especially the smaller ones. Many of these have fallen into disrepair and owing to the negligence of the villagers have become inefficient. It seems to be nobody's business to put them into order again. In quite a number of places in the Presidency there are small tanks which hold water for only a few months in the year, but they make all the difference to the local crops. If these fall into disrepair, the crops suffer or in some cases disappear. Channels often become silted up and are encroached upon and the result is the water-supply is defective.

2. There should be a special branch of the Irrigation Department whose business it should be to remedy these evils and to keep in thorough repair all the existing irrigation facilities and insist on those whose duty it may be to keep tank *bunds* repaired and channels cleared carrying out their responsibilities. The same special branch should examine the possibilities of small irrigation projects serving only a very limited area, both as regards the extension and improvement of existing schemes and the carrying out of new ones. Insufficient attention at present is devoted to small local irrigation schemes while work is concentrated on the big projects.

QUESTION 10.—FERTILISERS.—(*a*) The main drawback to the more extended use of natural manures is their cost. This has of late years increased so much that in many cases it has ceased to be profitable to use them, that is to say, the increased yields they give do not pay for the cost of the manure. This is largely due to the fact that these manures are being exported in large quantities every year and that there is a good demand for them, especially from the estates in Ceylon, by those who are growing highly priced crops and who can therefore afford to outbid the Indian cultivator, as the following figures will show:—

Export of festilisers from the Madras Presidency.

Name of fertiliser.	1923.	1924.	1925.
	Tons.	Tons.	Tons.
Bones	16,797	9,603	7,492
Oil-cakes—			
Ground-nut	399,487	299,572	388,178
Castor	12,450	66,352	24,674
Gingelly	97,359	207,559	355,946
Others	144,897	27,484	22,584
Horns	16,122	20,148	25,211

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Imports of fertilisers into Ceylon.

From 1898 to 1924.

Year.	Fish manure.		Fish guano.		Ground-nut poonac.		Bonemeal.	
	Tons.	Price per ton in rupees.	Tons.	Price per ton in rupees.	Tons.	Price per ton in rupees.	Tons.	Price per ton in rupees.
1898	73	57	10	120	...	...	4,714	55
1899	48	66	...	...	...	...	3,635	65
1900	25	51	31	168	...	...	4,802	51
1901	337	44	...	...	...	...	4,384	53
1902	899	51	...	...	...	..	3,723	48
1903	2,510	50	...	...	...	...	3,909	51
1904	3,131	58	10	156	1,393	68	4,377	57
1905	3,487	60	20	144	1,387	72	4,172	51
1906	6,001	58	20	149	1,630	80	10,286	36
1907	10,797	69	20	123	3,515	80	4,739	56
1908	9,713	57	50	151	4,827	79	6,573	67
1909-10	10,141	60	69	139	5,752	84	4,657	54
1910-11	19,845	59	160	111	8,750	81	5,544	65
1911-12	18,338	59	161	111	10,507	78	7,747	72
1912-13	20,726	57	3,661	98	15,627	87	6,644	83
1914	4,455	59	3,108	102	14,989	99	5,882	85
1915	3,082	73	52	30	31,624	86	9,766	77
1916	6,676	107	1,228	160	28,828	94	12,813	87
1917	7,645	66	1,287	129	16,114	98	5,392	106
1918	12,708	84	6,888	113	24,488	96	10,767	98
1919	13,363	102	10,963	132	20,092	121	12,535	88
1920	10,752	124	13,442	146	19,670	110	17,423	118
1921	3,618	102	1,576	146	3,553	117	5,052	118
1922	5,749	104	7,325	145	15,025	129	10,128	113
1923	9,292	86	12,578	117	14,103	122	14,673	107
1924	8,700	78	13,708	195	14,476	117	11,567	111

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Until this export is checked in some way it is not possible to extend the use of indigenous manures.

2. The use of artificial manures is increasing, but again it is largely a question of cost. Of late the price has been reduced and now sulphate of ammonia, for instance, is being used in very large quantities in this Presidency. If the price can be brought low enough to ensure a profit by their use, there is no particular difficulty in persuading the ryots to use manures. As an example, I may quote the V Circle (Trichinopoly), where during 1925-26 the following quantities of fertilisers were used by the ryots:—

	lbs.
Fish guano	5,824
Bonemeal	30,904
Trichinopoly phosphate	3,788
Ammonium sulphate and Nitrate of soda . .	6,864
Superphosphate	79,520

3. Much more can be done with the better preservation of cattle manure and with the manufacture of "artificial" farm-yard manure and both these are being widely demonstrated in this Presidency.

(*b*) There is very little fraudulent adulteration of fertilisers in this Presidency and no special precautions are necessary at present. Most firms sell under a guarantee and cases of deliberate fraud are very rare.

(*c*) The same methods as were dealt with under question 3.

(*e*) A great deal more research is needed on this subject. The chemical section of this department has done a great deal of work on the subject and is still doing such work, but a great deal still remains to be done, especially on the following lines:—

(1) Discovering how rapidly the use of artificial manures used alone deteriorates the quality of grain, and how soon cattle manure will make up such deficiencies.

(2) Discovering whether other organic manures like oil-cake, fish manure, artificial farm yard manure are as good as cattle manure.

(3) Testing the behaviour of combinations of organic and artificial manures with different crops and on different soils.

(4) Testing the efficacy of different phosphatic manures.

2. The results of our investigations will be shown to the members of the Commission in detail at the Research Institute at Coimbatore. They are far too numerous to detail here.

(*f*) I am inclined to think that the evil effects of using cowdung as fuel are apt to be exaggerated. A very large proportion of the cowdung thus used is collected from roads, etc., and would in any case have never reached the land as manure. Fuel of some kind must be had and people are not likely to buy wood, however cheap it may be, instead of using cowdung which they can get for nothing. I am of opinion that nothing can be done to stop this practice and that it does not matter so much as is sometimes thought.

QUESTION 11.—CROPS.—(*a*) (*i*) Existing crops can be improved along the following lines:—(1) purification, (2) increased yield, (3) disease resistance, and (4) drought resistance. A great deal has been done along the first of these two lines which were the most obvious and promised the quickest returns. Improved strains of paddy, cotton, sugarcane, *ragi* and *cholam* now cover large areas of this Presidency. Their further progress depends on facilities for distribution and reproduction and distribution of pure seed in large quantities. As regards the last two lines of improvement, work is now being begun and it will take time to evolve such strains. It is usually considered that it requires seven years for a plant breeder to evolve a new strain up to the point at which it can be safely given out to the ryots. It will probably take longer than this to evolve disease or drought resistant strains. At the moment, strains of paddy resistant to *piricularia*, of cotton resistant to boll

weevil, and sugar resistant to mosaic are being worked at. Much remains to be done and to this end the research and plant breeding stations should be strengthened to the utmost.

2. In this connection it is important that some easily recognised character should be built into every improved strain, if possible, in order that it may be easily recognised and track kept of its spread and purity after it has been distributed.

3. Work is urgently needed with pulse, oil-seeds, and fodder crops, while there are possibly results to be obtained from fruit. In particular a strain of ground-nut resistant to wilt disease is needed. A pulse expert, and oilseed expert and an agrostologist are needed.

(*a*) (*ii*) There is little scope for the introduction of new crops in this Presidency which already grows a very wide variety, but more might be done with the development of fruit culture on the hills and of vegetables on garden land, two crops which the department has hardly touched as yet for lack of staff.

2. As regards fodder crops several new varieties such as lucerne, *berseem*, a Guinea grass and Elephant grass have been introduced during recent years. Their scope is limited and it is not likely that any more new fodders could be introduced with success.

3. A large number of green dressing crops have been introduced with success and here again it is unlikely that any more can be usefully introduced.

(*a*) (*iii*) The rapid distribution of seed is a great difficulty and an undoubted handicap in the way of spreading a new strain over a wide area. There are in this Presidency no seedsmen of repute who can be trusted to take up this work, as is done in Europe, while the department cannot afford facilities for large seed farms. We are, therefore, dependent upon private individuals for the multiplication of seed and it often becomes mixed in consequence. An attempt has been made to overcome the difficulty by means of seed unions, subsidised by Government and supervised by the district staff, and in the case of cotton this has met with a good deal of success. In the case of paddy, however, such seed unions have not been very successful as this is a food crop.

2. The question is complicated by the fact that all crops cannot be treated alike as regards the method of seed distribution. In the case of millets, there will be a great deal of difficulty in keeping a pure line uncontaminated, because in this plant natural pollination takes place. It will, therefore, be necessary to spread any new strains over a very large area very rapidly if it is not to deteriorate very quickly.

3. This implies an increased staff of district officers to spread the strain and also some laboratory and controlled seed farm organisation on a big scale to keep on sending out a few tons of undenially pure seed on its career of expansion.

4. The work of distribution of seed is really work which should be done by co-operative societies, and the Agricultural Department should not be hampered by the work of distribution at all. Their duties should cease with the evolution of new strains and the maintenance of nucleus stocks of such seed. Co-operative societies have, however, hardly advanced far enough in this Presidency to be entrusted with this work on a big scale or to evince a desire to take it up.

5. In consultation with the Registrar, I have recently agreed to hand over the seed distribution now done by my department in any particular area to any recognised co-operative society and am willing to give them every chance of taking this work off my hands, even if at first they make mistakes, and the Registrar, at the beginning of this year, issued a circular to all societies to that effect, but so far there has been very little response and hardly any societies have come forward to do the work.

6. The solution of the difficulty appears to be for the Co-operative Department to make a special effort to push this line of work, and meanwhile we

must go on as we are doing now and be content to remain patient and content with slow but sure expansion.

(*a*) (*iv*) Damage by wild animals is a practically negligent factor in this Presidency.

(*c*) Efforts at introducing profitable crops sometimes prove too successful. The example of Cambodia cotton and ground-nut bears remarkable testimony to the adaptability of the ryot but not to his capacity to take long views. Cambodia cotton was introduced by the Agricultural Department as a suitable and paying crop to be grown under wells. Ryots took to it eagerly but they went a great deal further than the department advised them to, by raising Cambodia wholesale on unirrigated lands and without proper rotations. This multiplied insect pests and necessitated the enforcement of a Pest Act. Again, ground-nut was first cultivated on the less fertile dry lands of the South Arcot district. It was soon found that the ground-nut crop was eagerly bought in by exporters at handsome prices and the crop spread from district to district until the area under ground-nut, which was barely 74,000 acres in 1882-83, has reached the figure of 2 million acres at the present day. The crop is now grown on all kinds of soil, including black cotton soil, and sometimes without rotation, and is often grown irrigated under wells. This extension is, by no means, an unmixed blessing.

2. Cotton and ground-nut have been responsible for deflecting large extents of lands from the cultivation of food-grains. To a certain extent, the reduction in food grains has been made up by extension of cultivated areas and better rates of yield; but in a country, which does not import much foodstuffs, it is not a very wise policy to devote lands wholesale to the cultivation of money crops to the detriment of foodcrops. This will lead to an unsettling of the balance of the ryots' economic condition; the ryot can hardly eat money when his granary is empty, and as money is spent more quickly than grain, the poorer ryots in a tract liable to famine are likely to be left with neither grain nor money when seasons are adverse.

3. The rapid spread of ground-nut in recent years in the unirrigated tracts of the Circars and the Deccan which are liable to frequent famine or scarcity is a matter to be viewed with grave concern.

Question 13.—Crop protection.—(*i*) *External.*—The existing measures for the protection of crops from external infection, pests, and diseases are adequate.

(*ii*) *Internal.*—Internal measures against infection are provided for in the Madras Presidency by the Madras Agricultural Pests and Diseases Act, 1919. This Act is at present in operation in connection with the control of—

(1) A fungoid disease of the palmyra palm caused by *pythium palmivorum* in the Godavari and Kistna districts.

(2) An insect pest of coconut palms—*Nephantis serinopa* in Malabar and South Kanara.

(3) Insect pests attacking Cambodia cotton.

(4) The eradication of the water hyacinth.

2. No difficulty has been found in operating the Act in the first two cases and the last; and steady progress with the control of the respective pests and diseases has been made under its provision.

3. In the case of cotton, however, the Act has met with a great deal of opposition. The main pests at which control is aimed are the pink boll worm and the stem weevil. The only method of control of these insects which has been discovered is to ensure a dead season each year when there is no cotton on the ground, so that a large proportion of the insect population die of starvation and are unable to carry on to the next sowing season. Hence the new crop starts its life unhampered by insect attack and the harvest is reached before this population has increased sufficiently to damage the lint. Such measures have been adopted in most of the important cotton growing countries in the world. When the Act was first put into force in this Presidency

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in 1920-21, it was enacted that all Cambodia cotton should be removed from the fields and destroyed by 1st August each year. The usual sowing time, which depends on the advent of the early rains, is in October, usually about 15th October. Thus a two months' dead period was aimed at. The Act was, however, deficient in that it provided for notice of eradication being given and also time for appeal. The result was that it was seldom the cotton was removed until the end of August and this reduced the dead period to such an extent that it was useless for the purpose for which it was designed.

4. The Act has now been amended so that no notice need be given and it is illegal to have Cambodia cotton on the ground after the prescribed date, but that date has been made 1st September. Even if the Act is honestly complied with the resulting dead period is insufficient, a period of two complete months being the minimum period which is necessary to have any controlling effect on the insects.

5. The Act has always met with opposition because it interfered with the second picking. The first or main season picking is taken in May; the June rains produce a new flush and there is a second picking in July. If the rains are delayed, as is often the case, this second picking is not complete, or has not been taken at all, by 1st August. The ryot sees his cotton full of bolls and objects to being forced to destroy it before he can harvest this second crop. This crop is, however, badly diseased and stained and is very inferior and it is really a better policy to forego it so as to ensure that the following season's first crop shall be insect free and of good quality and thus realise better prices.

6. The natural opposition could probably have been satisfactorily dealt with by the Agricultural Department by means of propaganda, the ryots being a very teachable body of men. Indeed, in the neighbourhood of Avanashi, near Coimbatore, the ryots regularly remove their cotton after the first picking in June, plough the land and raise a fodder or food crop with the July rains, a very much better system of farming. The opposition has, however, been fostered by politicians and petitions were presented year after year and the Government have given way, with the result that the Act, though amended, has been rendered quite nugatory as far as insect control is concerned.

7. The Agricultural Department's case is a sound one and is based on facts and figures obtained by careful experiment. It may be summarised thus—

(1) At the Central Farm at Coimbatore, where the cotton has been regularly uprooted early each year, actual counts have shown that the maximum incidence of the pink boll worm has steadily declined, which shows what the Act would be capable of accomplishing were it strictly enforced.

(2) We know that flower buds, which are produced between the middle of December and the end of January, are the buds which give most of the crop of the first picking.

(3) We know that it is precisely this period over the greater part of which the spotted boll worm is most active in attacking flower buds.

(4) We know that attack of the spotted boll worm causes the crop to be six weeks late and that therefore in an unfavourable season with a shortage of water, the crop is bound to give a poor yield.

8. This being so, all cotton should be eradicated by 1st June. The effect of such an order would be twofold. The area of Cambodia would be reduced since it would not pay to grow it on dry land. This would not matter. It would be better to have a small area of really good cotton than a large area of poor quality stuff. The Agricultural Department could evolve a good cotton to grow on dry lands, and indeed have already done so. The second effect would be an increase of area under food and fodder crops which would have a beneficial effect on famine conditions.

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9. This case has never been considered on its own merits alone. At present, the Act only extends over some of the districts which grow Cambodia. It should not only be extended to cover all cotton-growing districts in the Presidency, but it should apply to all kinds of cotton, and the date of eradication should be made such that a real dead season is provided. Only in this way can adequate internal protection be provided for this crop against pests and diseases.

10. The only other alternative is to evolve a strain of cotton which is resistant to the pests. This is being attempted, but it is not likely to succeed. The breeding work of the department is at present greatly hampered for want of application of the Pest Act, since the breeding station is surrounded by cotton fields where the cotton is allowed to remain on the ground till 1st September and these insect-infected crops infect the cotton of the breeding station causing great loss and seriously hampering the work.

11. Two other legislative measures, which have as their object, the protection and improvement of the cotton crop have met with greater success, the Cotton Transport Act, III of 1923, and the Cotton Ginning and Pressing Factories Act, XII of 1925. The Cotton Transport Act has been applied to (1) the Tiruppur-Cambodia area, (2) the Tinnevelly area, and (3) the Northerns and Westerns area. No cotton, *kapas*, seed, etc., may be imported into these areas by rail except under a license issued by the Director of Agriculture.

12. The protected areas represent well-known trade types and in every one of them the Agricultural Department have evolved and given out to the ryots improved types, but work was hampered by the bringing in of inferior cotton by merchants for adulteration.

13. The Madras notification prohibits imports by rail and sea only. Import by road has not yet been touched owing to the great difficulties of such control. Cases have come to notice of cart traffic in cotton with a view to evade the Act, and there is evidence that cart traffic generally has received an impetus in the cotton areas from the restrictions on transport by rail. It is necessary to stop all such unfair traffic effectively by restricting traffic at least on the important routes.

14. Conditions are much more favourable for effective control of movements by rail. Vested interests have, however, done their best to obtain concessions which narrow the usefulness of the Act, *e.g.*, mills and exporters in the South have been granted annual licenses for import of Cambodia *kapas* in the current year at the instance of the Provincial Cotton Committee though such a step is admittedly opposed to the objects of the Act.

15. In spite of these set-backs, definite results have been achieved. Improvement has been reported in the Northerns cotton owing to the keeping out of Cocanadas cotton. Cotton marketed in the South has been comparatively free from admixture with Mysore and Deccan cottons and cotton in the Northerns and Westerns area free from admixture with short-stapled cottons from Bombay and the Central Provinces.

16. The Cotton Ginning and Pressing Factories Act regulates the working of the ginning and pressing factories. There are 62 pressing factories and about 370 ginning factories in the Presidency.

17. All pressing factories and most ginning factories maintain the prescribed registers showing the weights of cotton handled by them with particulars of ownership, and all pressed bales of cotton are clearly marked and numbered, so that it is possible to trace any bale of cotton back to its owner. It is as yet too early to judge of the merits of the Act.

18. Of late, small ginning factories have been springing up in the cotton areas, away from the railway and the pressing factories; and these are much more difficult to control though it is in them that clean ginning is most often neglected. Also, the control of scales and weights in the ginning factories hardly helps the ryot whose *kapas* is sold on the basis of weighment in the godowns of the dealer. A remedy for this situation will have to be found.

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QUESTION 14.—IMPLEMENTS.—(a) There is in all probability a great deal which could be done by way of improving the existing agricultural implements and machinery far more than along lines of introducing new machinery. Western machines are too expensive for the ryot and do not suit our conditions of small holdings.

2. What is very urgently needed is the careful testing of different makes of ploughs under controlled experimental condition, the testing of different makes of cane crushing mills and of water lifts and buckets, the invention of a cheap automatic seed drill and the improvement of yokes. Good, sturdy and cheap winnowing and threshing machines are a necessity, and it should not be difficult to improve upon the present type of country cart which is hard on the roads.

3. What is needed is a Research Engineer who is a farmer first and an Engineer afterwards, a man who is familiar with the land and the handling of agricultural implements and the various problems with which the ryot is confronted. He must have sufficient mechanical training and skill to be able to make implements with his own hands, and to know how to test them in the fields and alter them to fit more closely the desired conditions. He must, of course, be given a good workshop and equipment. Unless he knows how to use implements from the farmer's point of view, and knows ultimately what sort of work an implement should do, he will never succeed as a Research Engineer. Such a man will be difficult to find and I doubt whether he can be found in this country because the graduate in Engineering is not drawn from the agricultural community, while the graduate in agriculture is not likely to possess the mechanical aptitude to benefit by an Engineering training and become a good mechanic. It will probably be necessary therefore to look for him in England or America and get a man with farming knowledge and instincts who is at the same time a good and resourceful mechanic. It is true such a man will know nothing of the local conditions, but he is more likely to be able to learn these and apply his knowledge of mechanics to them than *vice versâ*.

4. Work of this sort has as yet been untouched and it is likely to lead to much more rapid progress than any attempt to introduce modern western machinery. Indian agricultural implements are in many cases extraordinarily well adapted to local conditions, they are cheap, easily made and repaired and they are constructed of materials close to hand. They are, however, undoubtedly capable of improvement if carefully studied in the light of modern knowledge of the soil conditions.

(b) This is largely a question of adequate demonstration and once more calls for increased staff. The limiting factors are price and the size of the cattle and the question of improvement of implements (especially ploughs) is closely bound up with the question of cattle improvement.

2. The pushing of iron ploughs, iron cane mills, chaff cutters, etc., is part of the regular propaganda work carried on by the district officers and ploughing demonstrations are given on all possible occasions. In 1924-25, 1,834 iron ploughs and 2,681 spare parts were sold in the Presidency and in 1925-26, 1,713 ploughs and 2,969 spare parts were sold. We can safely say that 1,600 ploughs are being sold every year and as the life of a plough is four years or so, there must be at least 6,000 iron ploughs now in use in the Presidency. The steady demand for spare parts shows that they are being used.

3. I consider this a very fair rate of progress when we bear in mind that fifteen years ago an iron plough was hardly to be seen off a Government farm.

(c) The main difficulty felt by the manufacturers is probably the comparatively small number of sales made in the year as compared with Western fields of operation. It would not pay a firm to manufacture any particular type of plough if they are only going to sell 1,500 a year, more especially as the price must be kept at the lowest possible limit. Another difficulty is probably the impossibility of giving credit.

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2. This is another matter which might well be taken up by co-operative societies who should be able to distribute ploughs once the Agricultural Department have demonstrated their efficiency.

QUESTION 16.—ANIMAL HUSBANDRY.—The answer to this question has been compiled by Mr. R. W. Littlewood, the Deputy Director of Agriculture, Livestock, who has requested me to incorporate his reply in my own. I have little to add to what he says beyond the fact that this Presidency has a definite policy of animal husbandry which is being steadily pursued with success. All the lines of not only cattle-breeding and distribution of breeding bulls, but also of dairy work and animal nutrition studies touched on by Mr. Littlewood are being pursued. The latter subject is being studied in close co-operation with the Imperial Physiological Chemist at Bangalore.

2. All that is needed is an opportunity to develop this policy to its utmost capacity, that is to say sufficient men and money.

3. With reference to dairying I believe that this will never prove really profitable until a pure food law is introduced to protect the honest dairyman from the unfair competition with which he now meets from those who adulterate their milk and *ghi* and can thus undersell any producer of pure milk.

4. As regards the possibility of utilising a cinematograph, please see my remarks under question 3.

(*a*) (*i*) *Improving the breeds of livestock.*—Pedigree herds of local breeds should be established and special attention paid to a dual purpose animal. Milk recording should be widely advertised amongst the milk contractors, zamindars and other cattle breeders.

2. Large zamindars should be encouraged to establish pure bred-herds of country cattle.

3. The three main breeds in this Presidency which may be maintained are the Ongoles, Kangayams and Alambady.

4. Breeding bulls from dams selected for their milk yields should be loaned to district boards for improving cattle in their districts.

5. A maintenance grant of Rs. 100 per animal should be given by Government to the District Board; the balance of maintenance should be made by the District Board; all services could be free. Bulls can then be transferred from district to district to prevent inbreeding and this may be done at the discretion of the Deputy Director of Agriculture, Livestock, after consulting the District Board. Good Ongole bulls will cost between Rs. 300 to Rs. 350 each at 3½ years to 4 years old. After the age of 8 years or so those bulls will become too old for breeding purposes. They can then be withdrawn to the farms, castrated, and sold as work animals and the receipts credited to Government. The animals would realise possibly Rs. 400 to Rs. 500 a pair.

(*a*) (*ii*) *The betterment of dairying industry.*—Small dairies like the one at the Coimbatore Agricultural College could be run by co-operative societies quite easily, as in large towns most of the separated milk could either be sold back to the ryots for feeding their calves, or sold to the coffee hotels in the towns.

2. Dairying in its strict sense is almost unknown in Southern India except for one or two Government farms.

3. Milk recording should be done at all large Government institutions, like hospitals, etc., where cows are milked on the premises, in order that reliable data regarding yields of the various breeds could be obtained. At present the Government farms are the only places where milk recording is done and as they have not a large number of animals, the data obtained are not sufficient.

4. At the present time in this Presidency, dairying is not a profitable business owing to the poor yields of the country breeds. A dairy will just about pay its way in this Presidency if good crossbreds are available. Crossbreds are at a disadvantage as they are not dual purpose animals in the eyes of the ryot. They yield good milk, but the majority of the ryots would not

purchase a crossbred bull for work purposes. They seem to be biased against them. Every effort should be made to produce a good animal of the country breed which will calve annually and will give sufficient milk to feed its calf and maintain it in good condition and also give a surplus which could be sold in order to pay for the cow's maintenance. Until it is achieved, dairying will not be a profitable industry, as will be seen from Mr. Carruth's Bulletin, that is, that the average Madras milkman just about pays his way and this is after he has adulterated his milk.

(*a*) (*iii*) *Improving existing practice in Animal Husbandry.*—In former years when a big man died in a village his relatives generally dedicated a bull to the temple. A committee of local breeders was immediately called and bull calves were brought for inspection. The examination was very strict and if a bull did not possess all the points which the committee thought the breeding bull should have, it was not accepted. In this way, very good bulls were dedicated to temples. Owing to the increased price of cattle, this practice of dedicating a good bull to the temple is gradually becoming obsolete. The relatives pay only a small amount for an animal and dedicate it to the temple without the consultation of the committee. Owing to this, very poor breeding bulls are seen in the districts. A Brahmini bull in former days was allowed to roam over any crop and was in a good condition. But, in these days, when expensive crops are being raised, the ryot in many instances does not think twice about driving it out of his field, and so bulls are seen to-day in a poor condition. I strongly advise the appointment of a committee of capable breeders in each village for the purpose of selecting bulls for dedication to temples and for supervising the breeding cattle in the village.

2. More veterinary hospitals should be opened in the districts in order to combat the diseases which break out.

3. Preventive inoculation against rinderpest should be well advertised in all the villages.

4. More propaganda work should be done by the Veterinary Department in demonstrating bloodless castration, and this will require more staff. I suggest that the committee stated above should also decide what bull calves should be kept for breeding in the village and also state that the remainder should be castrated by the Veterinary Officer by a bloodless castration method. The committee could also see that every bull calf not recommended was castrated. The benefit of castrating useless bull calves should also be pointed out to cattle breeders by the Veterinary Officers. For instance, the Ongole breed of cattle is deteriorating annually owing to bad breeding bulls and to the importation of outside blood; this is due to cows and heifers being served by outside bulls in the grazing areas.

5. Small herds of the main breeds of cattle and buffaloes in this Presidency could be kept in each experimental station for the purpose of demonstrating good feeding and rearing, milk recording, etc., to the ryots of the district. A herd of six or seven cows with one breeding bull would suffice for a beginning and the bull could be utilised as a stud bull for the district at the same time.

6. Village panchayats should be encouraged and they should be advised to pay attention to limit the stock grazing lands and not overstock these as is usually done.

7. Silage-making should be demonstrated in the breeding tracts by the Agricultural Demonstrators, especially in years of good rains when there will be an abundance of green fodder. Silage-making should also be demonstrated to Forest Panchayats so that use can be made of the grass and weeds which grow in the forests.

8. Concession towards purchasing good breeding bulls by co-operative societies should be given by Government.

9. Co-operative societies should be encouraged to open milk depôts in the districts where milk is plentiful. Butter and *ghi* could be manufactured on sanitary and scientific lines, and so the ryot would eventually become educated in this line of business.

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10. It is to be noted that the ryot does not pay any particular attention to the feeding of his female stock. Cows and heifers generally receive the fodder discarded by the bull calves and work bullocks. The ryot should be educated and shown that neglecting his female stock is unprofitable. He should be taught how to feed and rear his cows, and I think a demonstrator with a cinema exhibition showing work on Government cattle farms, etc., would be the best means of bringing this to the knowledge of the ryot.

11. Milkmen's Co-operative Societies should be formed in large towns in order to purchase foodstuffs and fodder in bulk and so obtain it at a cheaper rate. Advances should be given to milkmen for the purchase of fresh cows when their cows become dry.

12. Regarding the Madras Dairy Industry, all reserved forests in the neighbourhood of Madras City should bs reserved specially for the grazing of dry cows belonging to the milkmen of Madras. Forest Panchayats will levy a monthly sum for grazing. This would no doubt stop the slaughtering of good cows when they become dry. From information received at various times, it is discovered the Madras milkman now sends most of his good cows into the Nellore district for grazing until they calve down again. It is due, no doubt, to the decreasing numbers of good milk cows and the milkman is just realizing that good milking cows are not plentiful and that it is more profitable to retain his good milkers and to pay for their maintenance whilst dry.

13. It has been pointed out by different people at various times that the maintenance grant of hundred rupees towards the maintenance of a breeding bull is hardly sufficient in these hard times, and possibly better results could be obtained if Government increased the grant by 25 per cent. (The Director now has power to do this.)

14. Steps should be taken to work out the different values of all Indian foodstuffs and fodders as soon as possible and a list giving data of all these should be prepared by each Provincial Government. This will be of great benefit to the cattle breeder and rearer. He will then have some idea how much concentrated food, etc., should be fed to the different kinds of stock and he will also be given information as to the manurial value of each foodstuff.

(*b*). (*i*) *Injury done by overstocking of common pastures.*—The injury done by overstocking is that the animals are never in good condition and so they are liable to pick up any disease which comes along.

2. Bull calves between the age of 1 and 2 years very often serve pure bred cows, and so various breeds of cattle become mixed. No bull calves should be allowed to graze in the grazing areas along with female stock. Only bulls of well-known pedigree should be allowed to roam over grazing areas.

(*b*) (*ii*) *Absence of enclosed pastures.*—Young grasses in pastures never get a good chance to grow as the ryot is often so short of fodder that he turns his cattle on to the grazing grounds immediately after the first shower of rain.

2. In this Presidency it is seen that the ryots usually graze their cattle on the grass *bunds* and these are generally in charge of a boy or woman.

(*b*) (*iii*) *Insufficiency of dry fodder.*—According to my knowledge, dry fodder is becoming scarce in the Ongole breeding tract in the Guntur district where the introduction of commercial crops, such as tobacco, ground-nut, etc., is gaining ground rapidly. A ryot will only grow fodder value about Rs. 40 per acre whereas he can make as much as Rs. 100 to Rs. 175 per acre out of tobacco so that this becomes an economical problem. In the Guntur district alone the Imperial Tobacco Company now employ about thirty Europeans in leaf production, and this must have an effect on the cattle-breeding of the district.

(*b*) (*iv*) *Absence of green fodder in dry seasons.*—This is very noticeable, as during the last three years the Kangayam breeding tract has suffered from water scarcity and it is seen that the Kangayam cattle on the whole were smaller in size than those seen in previous years.

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(c) *Fodder shortage.*—There is generally scarcity of fodder in the Coimbatore Dairy during the months of March and May and in Hosur and Chintaladevi from February to May. Animals do not begin to thrive until July or August, that is, six to seven weeks.

(d) *Supplementing fodder supply.*—I am informed that in former days, the Ongole ryot who reserved one-fourth of his holdings for grazing land was not taxed on this portion. In these days he is taxed on the whole of his holding and so he is unable to leave all this land uncropped. He maintains the same number of cattle as in former days, grows more commercial crops, less fodder crops, reserves about one-third of his former pasture for grazing and so his cattle suffer.

I suggest that grazing areas be free of tax in the ryots' holdings and that each ryot should be compelled to grow a certain amount of fodder or straw sufficient to maintain the number of animals he keeps and that his number of animals should be limited to his holding.

(e) *Keener interest in these matters by ryots.*—There are no ryots in this Presidency who devote their whole attention to cattle-breeding. Cattle-breeding is mainly one of their side lines. The Indian ryot generally has a little of each crop and he seems to dabble in everything.

2. I do not think landowners will take much practical interest in cattle-breeding until they can see that this is a profitable business and until the breeds of cattle are improved and their milk yields increased, I do not think interest will be shown. The price of Indian cattle is too low.

QUESTION 19.—FORESTS.—Forest lands are probably not being utilized to their fullest capacity for agricultural purposes, but it is extremely difficult to utilize such lands. Directly strict control is raised, the lands are apt to be abused and the trees stripped off them, when soil erosion takes place very rapidly. There are very many places to be seen where, in comparatively recent times, there was jungle and now there is nothing but bare rock.

2. One of the best attempts which has been made to solve this problem of recent years is that of the Forest Panchayats, and it should be possible to persuade such panchayats, not only to conserve the forests handed over to them and regulate the grazing and fuel cutting, but also to teach them to plant trees, grow green dressings, both for seed and cutting, cultivate fodder crops, prepare hay and silage as a reserve in the hot weather, and even to keep breeding bulls and regulate the cattle-breeding.

3. Steps are now being taken to get into touch with the panchayats with this object in view. The panchayat system should be encouraged and it should be the first step in the learning of co-operation and should develop ultimately into co-operative societies.

4. The difficulty with such Forest Panchayats, however, is the same as that with co-operative societies, agricultural associations, etc. A very few of them are really good and mean business. Too many of them depend entirely upon the enthusiasm of one or two public-spirited men, and when they go the panchayat, society, or association rapidly decays and dies. Many of these bodies except Government officers to do all the work and even give them a subsidy, and as soon as such help is withdrawn the body rapidly dies.

5. What is needed is a much greater spirit of public service and self-help. Where good organisations exist they are being encouraged and used to the utmost, but there are at present far too few of such bodies.

QUESTION 20.—MARKETING.—Adulteration wherever possible is the rule. Improvement is largely dependent on educating the conscience of the buying public.

2. In the matter of dairy products, such as milk, butter, *ghi* and curds, adulteration is particularly rife. This is largely a question of economics. Under existing conditions, it is almost impossible to make dairy products available in a pure state on a large scale at present prices. In large towns, milk is usually watered or mixed with flour.

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3. *Ghi* is obtainable only in an adulterated form everywhere except in the large producing centres and even then, only when purchased from the direct producer. The adulteration of *ghi* is due to the rapid extension of the markets for *ghi* and the smallness of supplies. Oils are also subject to adulteration, lower priced oils being used to adulterate the higher priced oils. In respect of these, co-operative production and sale have a good chance of contributing to public welfare by making and selling standard qualities of these articles at reasonable prices.

(*a*) Existing market facilities are very far from being satisfactory. The history of the Tiruppur cotton market will serve to show the difficulties which exist:

(*i*) The idea of a cotton market was first mooted at a meeting of the cotton growers and sellers of the Coimbatore district, held at Coimbatore on the 10th July 1918, which resolved, among other matters,

(1) that a " Coimbatore Cotton Marketing Association " be formed, and

(2) that the possibility of this Association establishing markets for *kapas* at *Coimbatore*, *Pollachi*, and *Tiruppur* should further be considered.

(*ii*) A committee appointed at the above meeting to consider the best methods of carrying out its resolutions met on the 3rd August 1918 and recommended that the Coimbatore Cotton Marketing Association when formed should approach Government to have a market opened at Tiruppur *under the auspices of the Municipality* and controlled by the rules of the Association, and that the opening of such markets at other centres could be considered later, if the experiment at Tiruppur proved successful.

(*iii*) The opinion of the Advocate-General was obtained by the Director of Agriculture as to the powers of municipalities in regard to such markets. The opinion favoured the proposal. It is extracted below:

" Municipal Councils can provide places for use as public markets for cotton (*vide* sections 194 and 113 of Madras Act IV of 1884). Sale of cotton in or upon any public street or part thereof can be prohibited—*vide* section 203 (1) of Madras Act IV of 1884."

(*iv*) The matter was accordingly placed before the Tiruppur Municipal Council and it readily accepted the proposal.

(*v*) The Municipal Council in its meeting held on the 19th February 1919 passed a resolution in regard to the establishment of a cotton and *kapas* market and submitted copies of its resolution and the recommendations of its sub-committee for the approval of Government.

(*vi*) The proposals of the Municipal Council were approved by Government in G. O. Mis. No. 649-M., dated 26th April 1919, and the Council was requested to frame by-laws for the management of the market and submit them for the approval of Government.

(*vii*) A suitable site was selected and approved by the Collector and the foundation stone of the cotton market was laid by His Excellency the Governor on 14th June 1919.

(*viii*) The plans and estimates of the cotton market were sanctioned in G. O. No. 438-W., dated 12th March 1920, and it is understood that the market buildings have nearly been completed since.

(*ix*) Draft by-laws were framed by the Coimbatore Cotton Marketing Association at the request of the Municipal Council and passed in a general meeting with Mr. H. C. Sampson as President. The by-laws were based on those of the Berar cotton markets, modified where necessary to suit local conditions. They went further however, in two important respects, (1) in the definition of the *market proper*, which was made to include the whole of the municipal area, and (2) in the direction of protecting the trade from the malpractices of unscrupulous dealers which are likely to lower the standard of cotton produced and consequently its price.

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(*x*) Meanwhile considerable opposition to the cotton market began to be visible among the commission dealers, agents and middlemen at Tiruppur. The opposition first took shape in regard to the location of the market. The objection was disposed of by the Collector, Mr. F. J. Richards after personal inspection who decided in favour of the site on the Palladam road. The objectors then urged the abolition of the market. As they were, however, in a minority, they were informed by the Municipal Council that they could only make suggestions for modifications in the by-laws. Objections and suggestions were also invited under section 256 (1) of the Madras District Municipalities Act, 1884. Those that were received were considered at a meeting of the Municipal Council held on 22nd March 1920 and the draft by-laws, suitably amended in the light of them, were finally submitted for the approval of Government on 29th March 1920.

(*xi*) Meanwhile the Madras District Municipalities Act of 1884, under which the draft by-laws were framed, was replaced by Act V of 1920. The Advocate-General, to whom the by-laws were forwarded for scrutiny, held that the more important of them were illegal and *ultra vires* under the new District Municipalities Act.

(*xii*) Government then considered the question whether special legislation should be enacted on the lines of the Berar Markets Act so as to enable by-laws such as those drafted for the Tiruppur Market to be duly enforced.

(*xiii*) A draft Bill, the Madras Industrial Crops Markets Bill, was prepared, embodying the essential features of the Berar legislation, but the proposed legislation was abandoned by Government, as it was supposed to contain many features, open to controversy or objection such as (1) the proposal to levy a tax on all cotton entering the municipality, but not necessarily entering the market "yard," (2) the proposal to limit the number of municipal councillors on the market committee, and (3) the financial relations between the council and the committee.

(*xiv*) The only alternative was, therefore, to amend the by-laws so as to come within the scope of the District Municipalities Act V of 1920 and this was ordered by Government. Meanwhile the attitude of the Municipal Council entirely changed after the election of the councillors in 1920 and the Municipal Council appointed a committee of three councillors, including the chairman and three cotton merchants of Tiruppur to undertake the amendment of the draft by-laws and they did this in consultation with the Inspector of Municipal Councils. The draft by-laws as modified by the council are to be found in column 3 of Appendix XV.

(*xv*) The market is to be for grains and other agricultural produce as well as for cotton, under the new scheme. There is only one representative of the Cotton Marketing Association who must be a cotton merchant resident in Tiruppur as against six under the old scheme. Except for providing space and accommodation where buyers and sellers can meet, none of the original objects with which the market was built is given effect to in the new draft by-laws and it is difficult to see how the interests of the grower, middleman, merchant and buyer are to be safeguarded.

2. It will be seen from this that the whole question has now come to a deadlock and no further action in developing cotton markets can be taken till special legislation is introduced.

(*b*) *Existing market facilities and systems of marketing and distribution for different kinds of agricultural produce.*—Dotted throughout the Presidency and at distances varying from 10 to 20 miles are innumerable weekly markets. These are owned mostly by Local Boards or Municipalities and in some cases by private individuals. Agricultural produce from villages finds its way to these markets either through village cart-tracks or by head-loads or by canals according to the nature of the district. The markets are mostly situated on local fund roads. In the delta districts of the Circars the means of communication is usually by canals. On the West Coast the agricultural produce is taken usually by head-loads to the markets. In all other districts, villages are connected with each other by a net work of cart-tracks which are never re-

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paired or maintained in good condition for traffic. After the produce reaches the weekly markets they are conveyed to towns by local fund roads or by boats or by trains. From hill districts produce like grains, tea, or coffee are invariably carried by bullock carts where roads of some kind are available or by pack animals. This Presidency is not adequately supplied with railways though more and more railways are being opened, but railways will not, in the near future, be able to command all the traffic in agricultural produce and bullock carts will remain the chief means of conveyance for many years to come. Improvement of the condition of roads, repair of cart tracks through the agency of village panchayats, the use of motor lorries for the transport of agricultural produce from weekly markets to big trading centres, the abolition of the numerous tolls on the local fund roads are some of the ways by which the system of transport could be improved.

2. *System of marketing.*—Crops may be divided into two main classes (1) food crops and (2) commercial crops.

3. *Food crops.*—In the case of food grains, the bulk of the produce is sold to middlemen, merchants and moneylenders to whom the producer is indebted for cash advances for cultivation or family expenses. The big landowner who is generally solvent prefers selling in the open market and such men sometimes hold stocks for a rise in price. In the case of paddy, there are a large class of professional dealers who go about the villages and arrange to buy stocks and supply them to big merchants in towns. The dealers always approach the village *sowcar* who acts as sub-dealer and also as a petty merchant. Export to outside districts or out of India is arranged by larger traders in towns.

4. *Commercial crops.*—In handling commercial crops like cotton, groundnut, jaggery and oil-seeds, etc., both a moneylender who acts as a middleman and a commission agent are involved. It will perhaps be unnecessary for the purpose of this reply to enumerate in detail the methods of marketing these commodities in the various districts, but I shall give some typical examples.

5. *Cotton.*—The methods of marketing cotton vary in different centres. At Adoni, the ryot takes his cotton in country carts to the market place. The agents of the buying firms go about inspecting the cotton and then state their rates for that particular day. The ryot then takes his cotton to the compound of the agent whose offer is the highest and by the time the carts reach there the commission agents also arrive. Each ryot chooses his commission agent who attends to the weighing, etc. The agent of the buying firm examines each *bora* and begins to pass a few *boras* and rejects the rest, but the latter are accepted when the ryot is prepared to give allowance, *i.e.*, so much cotton free for each 12 maunds. The ryot is obliged to give the allowance, as such of the *boras* that are rejected are marked and no other firm would give even the price first offered when they see the marks on the *boras*. The commission agent helps to reduce this allowance at times, but he does not press the claim in the way he ought to do as he does not want to be at loggerheads with the firms. In addition to the allowance and the commission, the ryot has to pay for weighing charges, etc.

6. At Bellary, the ryot and the middleman bring their cotton to the market and if the price offered is acceptable to them they dispose of it the same day through the commission agents. Otherwise they leave the cotton with the commission agents, borrow money from them to the extent of 50 to 60 per cent. of the value of their cotton and go away to their villages after instructing the commission agents to sell their cotton as soon as the market improves. The agents very often borrow money from the bank on security of this cotton and sell it at their convenience. The ryots will have to accept any rate which the commission agent says he sold their cotton, but he seldom states the value which he actually realized. In addition to the interest on the money advanced, the commission agent gets his commission, godown rent and insurance charges, but the ryot has also to give allowances in kind and pay for weighing charges, etc., as at Adoni. The ryots in Bellary centre are for the most

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part under the thumb of the commission agents and middlemen to whom they are always indebted.

7. At Nandyal, most of the cotton is sold on forward contracts. The village middlemen and sometimes the big influential ryots enter into forward contracts with the buying firms some months in advance. They buy cotton from the ryots either on forward contract or for cash and fulfil their contracts. Some ryots, however, prefer to sell their cotton direct to the firms. They bring it to the market on the day convenient for them and dispose of it at the prevailing rate. They have no option to wait till the price for cotton rises as there are no godowns at Nandyal.

8. *Ground-nuts.*—This crop is largely exported. The cultivator sometimes sells the crop on the land to the dealer who arranges to harvest the crop and sells it to the sub-agent of the big buying firms like Volkart Brothers. These big firms establish small depôts at convenient centres where the produce is collected and then transport it to the ports. Holding up of stocks by rich landowners is not very common in the case of this crop as the commodity is more or less of a perishable nature.

9. In the case of a crop like sugarcane, which is grown on a comparatively low acreage but which at the same time involves large financial transactions, marketing conditions are generally bad. The trade is in the hands of a few commission agents working on behalf of merchants, and these men go about the districts during the season and successfully form a ring. The producer deals through the village moneylender to whom he pays commission for the privilege of sale, godown rent, a contribution to the village deity and interest in small sums of money advanced through the season. The middleman or moneylender is unable to get a fair price on account of the ring aforesaid and the producer suffers in consequence.

10. *Ways and means of improving existing systems of marketing.*—The existing systems of marketing will be improved in proportion to the advance made in general education of the ryot and the population as a whole. This is a fundamental need.

11. In the meanwhile, an improvement may be made by the establishment of organisations for the purpose of co-operative credit. Until experience has been gained in this form of co-operative work and until members who actually cultivate the land are solvent and sufficiently educated to conduct the affairs of such organisations, effort to sell co-operatively is likely to end in disaster, for the success of co-operative sales organisations depends on the handling of large quantities of produce of one kind necessitating the employment of a business man of experience, and until co-operative credit work has created confidence in the minds of the average ryot, sale transactions would not be on a sufficiently large scale to warrant the employment of a special man for the purpose. The primary need, therefore, is the undertaking of co-operative credit work with a view to remove or at least to mitigate the indebtedness of the ryot which forces him to sell his produce to the village *sowcar* to whom he agrees to sell by a system of forward contracts.

12. *The channel of marketing and distribution from the producer to the consumer in India or exporter in the case of produce exported overseas.*—The produce, in the case of foodgrains consumed locally, pass from the ryot to the middleman, who sells to the merchant. In the case of produce sent out of the district by road or rail, the channel of distribution is from the ryot to the moneylender or middleman, who sells to the commissioned agent on behalf of the exporter. The latter sells to the importer, who, in his turn, sells to the merchant until the produce finally reaches the consumer.

13. In the case of export by sea, the produce passes through at least one middleman before it reaches the commissioned agent employed by the exporting firm. There are therefore three intermediaries from the producer to the exporter.

14. *Services rendered by each intermediary and whether each intermediary acts in the capacity of a merchant or commission agent.*—The middleman and

moneylender are the only intermediaries who are in touch with the actual growers and it is they who furnish information, correct or otherwise, regarding conditions of crops and harvest prospects in the area in which they work. In the case of commissioned agents employed by exporting firms, their services are necessary because it is impossible for a firm to become sufficiently acquainted with bazaar prices and fluctuations except through such agencies. Further, dealing with middlemen direct is difficult, as these intermediaries usually deal on a small scale and lack the necessary capital.

15. The small middleman acts in the capacity of a merchant in the case of produce for export purchased by a firm through a commissioned agent. When purchase of produce for local consumption is involved, the middleman often acts in the capacity of commissioned agent, but in the majority of cases as merchant and moneylender. In the case of commercial crops, the middleman, to a limited extent, may act as a commissined agent only.

16. *The margin upon which such intermediaries operate.*—A commission agent will make from 1¼ to 3 per cent. on transactions and the merchant will get from 5 to 6 per cent. The rates will be low in the case of foodgrains and higher in the case of commercial crops.

17. I have no information regarding the rate of commission allowed by European exporting firms to their commissioned agents nor do I know the margin on which such firms work in handling different classes of agricultural produce.

18. *The method by which each transaction is financed or, in the case of barter, by which an exchange is affected.*—In the case of small transactions between moneylenders, merchants and the producer, a promissory note is given by the latter stipulating that he will either pay in cash or in kind at a specified rate at the time of harvest. The rates of interest charged vary from 10 to 30 per cent.

19. In the case of produce sold in larger quantities and more especially commercial crops, it is a common practice for the big merchant to advance money to their commissioned agents, the rate being about 5 to 10 per cent. of the value of the produce to be purchased, the balance being payable after the produce is delivered.

20. A system of barter by which an exchange of goods is made exists in the Agency tracts and in other hill villages, agricultural produce being exchanged for cloth, beads, bangles, oil and dried fish. I have no detailed information as to the basis on which such exchanges are affected.

(*c*) 1. *Steps whereby the quality, purity, grading or packing of agricultural products may be improved—Distinguishing where possible between the produce destined for* (*a*) *the Indian market and* (*b*) *export.*—(*a*) Improvement in the quality of produce for the Indian market is dependent on an improvement in the methods by which produce is sold. The advance of money for cultivation against a valuation put on the crop before it is harvested encourages the ryot to ignore questions concerned with purity. This method of financing the producer discourages the cleaning and drying of produce and quality is thereby affected. Improvement in the quality of produce is possible by means of pure line selection and by hybridisation. Attention should also be paid to methods by which cereals become adulterated by cross fertilisation, use of farmyard manure containing foreign seeds, the threshing of different varieties on cowdunged threshing floors. Adulteration in all such cases is involuntary and must be distinguished from deceitful mixing of produce and wilful neglect in the matter of cleaning, winnowing, and drying.

2. (*b*) In the case of produce intended for export, steps should also be taken to remove causes of adulteration referred to above. This should form part of the propaganda work of the agricultural department, agricultural associations, and co-operative societies. There is a demand for uniform, pure and graded produce in the case of commercial crops, but here again the system of sale and the method by which the producer is financed is the root cause of bad quality and adulteration. The remedy lies in improving the economic condi-

tion of the producer and progress in this direction can be made by the establishment of co-operative credit societies. When the ryot is solvent and independent of loans outside his society, he will be in a position to sell his produce according to quality.

3. The formation of co-operative sale societies, which should be the sequence of successful credit work, will make it possible to introduce systems of grading and an improvement for the export trade.

4. *Whether effective steps might be taken to place at the disposal of the cultivators, merchants and traders information as to market conditions whether Indian or overseas, crop returns and marketing news in general.*—In the case of the insolvent ryot or cultivator who is indebted to the village moneylender and middleman, little advantage will be gained by the circulation of information concerning market rates. In the case of co-operative societies, such information would be of value, if supplied in time, and this would also apply in the case of big growers who are solvent.

5. As the methods of transport are slow, neither the producer nor the dealer are in a position to take the best advantage of fluctuation in prices. The supply of information to merchants and traders concerning marketing news in general is already undertaken by Chambers of Commerce. The Madras Agricultural Department publishes the crop forecasts and the season and crop reports, but this does not contain any prices in the various markets. Collection of information regarding the prices in the various taluks might perhaps be undertaken through the agency of the taluk tahsildars, but whether the benefits that are expected to accrue from such publication will be at all commensurate with the labour involved is rather problematical in view of the conditions of marketing prevailing in the country already explained.

(*d*) A great drawback in marketing is the multiplicity of weights and measures. Standardisation is a crying need. The Weights and Measures Committee recommended such standardisation as long ago as 1913-14, but its recommendations have not been given effect to. If one definite standard cannot be agreed on for the whole country, a simplification at least of the present bewildering number by setting up fewer standards suitable to homogeneous areas is desirable. In Vizagapatam and Ganjam, weights and measures vary from taluk to taluk and sometimes from town to town. Other districts, though not so bad, are still in a bad way.

2. Such discrepancies enable the buyer, who is the shrewder of the two, continually to deceive the seller who is a ryot. Professional merchants are known to have two sets of weights, the larger for purchasing stocks and the lighter for selling in retail. Information as to the general level of prices under fluctuations from time to time can hardly be of use when their conversion to local weights and measures had no meaning or is not possible.

Question 24.—Attracting Capital.—(*a*) Men with capital have hitherto purchased land more with a view to stabilise their position and provide for their less gifted children than to adventure with new improvements in agriculture. The reason for not devoting capital to agriculture is that there is a larger income from capital put to other uses than agriculture. The best cultivation in this country is not the result of the efforts of the capitalist farmer, but that of the ryot who has a small garden farm with a good will. There, freed from the worry of the variable monsoons and from the need to pay heavy assessments, the ryot resorts to intensive cultivation and appears at his best. Capitalist farmers might be a success in countries which are young and where land fit for cultivation is available in plenty. In India the tendency of farmers with surplus capital is rather to increase their holdings by purchase of more land than to devote it to more and more intensive cultivation. Such purchase would be useful at least in creating large holdings, but for the fact that, in the next generation the large holding is again subdivided into smaller parcels. As the joint family system is well-nigh unalterable, right lines of progress lie in finding more and more ways and means of increasing yields of land owned by the small farmer who has a little capital and this is what the Agricultural Department has set itself out to do.

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The number of men who live by agriculture is large enough. There is not enough work and not enough wages and income for them, even now. The need is not so much for diverting the capitalist to agriculture as for securing that such floating capital as is in the hands of the ryot is conserved and used for the benefit of agriculture. Helping him out of indebtedness is one way of achieving this end. Another way is by educating him in proper ways of living, *i.e.*, making him spend more on things like sanitation, wholesome food, and decent dwellings, which will improve his efficiency, and spend less on marriages, ceremonies, promiscuous charity and drink. These changes will make him a *plus* instead of the *minus* economic unit he now so often is.

(*b*) *The force of custom and tradition.*—The Indian ryot is, as all good ryots should be, conservative, and is slow to give up traditional practices unless others are clearly demonstrated to be better. When such demonstration is forthcoming his response is ready enough. The Agricultural Department had first to learn and then to teach. The process of teaching the ryot by effective demonstration began not so very long ago, and the results have been, by no means, discouraging. It has to be remembered that there are only a few hundred men to demonstrate to the ryots of a Province as large as Madras, and that there are comparatively few other agencies to supplement their influence and teaching.

2. Other factors are ignorance and indebtedness.

3. Another reason is what may be described as a "lack of strenuousness" which prevents people from doing the best they are capable of. There is a tendency to remain in a state of contentment with things as they are, which is detrimental to progress. The defect is constitutional, probably due to climatic causes; and the influence of malaria and hookworm, but it has to be reckoned with.

QUESTION 25—WELFARE OF RURAL POPULATION.—The following replies to question 25 have been supplied by M. R. Ry. V. N. Visvanatha Rao, M.A., B.L., the Statistical Assistant to the Director of Agriculture, Madras, who has had some experience in these matters. At his request I am incorporating it in my replies to the Questionnaire.

(*b*) Yes. The scope should be the ascertainment of the economic position of the ryot. As to the scope and methods of such enquiries, I am in agreement generally with the views of Mr. Burnett Hurst in the Report of the Economic Enquiry Committee.

(*c*) Villages may roughly be divided into three classes:—

(1) wet land villages,

(2) villages with superior dry lands and where gardens (lands with wells) predominate,

(3) villages with inferior dry lands.

In (1) the classes who depend on unearned increments (*e.g.*, Brahmins, Non-Brahmins higher castes) have taken most readily to English education. This has led to the disintegration of the joint family life, the prosperity of individuals and hardships to many, and extravagance in living by imitating their betters. With the removal of the check on procreation imposed by life in the joint family houses, the families of these individuals usually increase in geometrical progression, and the result is partition of property into uneconomic holdings, migration to towns, indebtedness, sale of land, etc. This will be obvious by taking the history of families taken at random, which have been educated for three or four generations. In the fourth generation, they are more often objects of pity than of envy. The landless labourers in the wet villages have been more or less the economic slaves of the landholders and there is much discontent, now that he has discovered that to be such a slave is neither pre-ordained nor in the eternal fitness of things. The efficiency of the worker has been lowered by such discontent, and this together with the attenuation of the purse of his master, is leading to the deterioration of wet cultivation. On many of these holdings yields have gone down to the abso-

lute minimum, as is shown by the wonderful way in which crops on them have been known to respond to good farming when they chance to get it.

2. The superior dry and garden land villages usually have a sturdier ryot population; the Brahmin is absent, except as a *purohit* (priest) or as a school-master; the ryots are more accustomed to work with and supervise their labour; and families do not multiply with the fatal facility that is so often observed among the educated townsmen. The result is that in these villages the ryot is at his best. He is resourceful, and receptive of ideas, and usually has enough money to adventure with new experiments. It is he that has been responsible for the sweeping new practices in cultivation that have come in recent years, the spread of Cambodia and Karunganni cotton, the better cultivation of dry lands. He does not readily buy wet lands, and he is slow to resort to English education. They are usually approached directly by the Agricultural Department but approach through their sons at the Agricultural College is practically barred, as they do not care to master English and Mathematics which is the entrance qualification to such schools. A scheme of vernacular middle schools may possibly provide for a real want among such men.

3. In (3) the ryot is face to face with the wolf at the door. There is very little unearned increment from land. Land does not respond except to hard work and even then only if the season is favourable and the village population is usually a struggling proletariat. A few wells make a few families somewhat better off than their neighbours. In a good year, there is surplus money to indulge in such luxuries as litigation in civil or criminal courts. As they are dependent on the vagaries of the seasons, they do not care to spend money on improvements, which may not give them more. The population is fairly stationary and the surplus, if any, move off to the more prosperous areas.

QUESTION 26.—STATISTICS.—(*a*) (*i*) Figures of areas under crops are fairly accurate with two exceptions. Crop areas are not recorded in detail in permanently settled tracts which cover about one-third of the Presidency. The reliability of the figures reported by estates vary, depending on whether they are surveyed or unsurveyed, and whether their administration is assimilated to the standard prevalent in the ryotwari tracts. Any improvement must take the form of the maintenance of land records in these tracts and this implies a sufficient staff responsible to Government and not to the landholders.

2. The second exception is in the case of dry crops which are often sown mixed in the same field. This is especially the case in the Deccan. In such cases, it is difficult to ascertain the area under each crop. At present the area is split for recording purposes into its component crops in proportion to the rows under each.

3. It was suggested by Mr. Stuart, when he was Director of Agriculture, that the area under each important mixture should be entered separately in the Season and Crop Report. When the areas of mixtures are of sufficient importance he proposed once every ten years to make a detailed census of actual crops by a special staff, and specify all mixtures in detail; to compare the figures thus obtained with those reported by *patwaris*, and on the basis of this comparison to estimate the usual proportion of mixtures and adjust the yearly figures accordingly.

4. It is by no means certain that this would be any improvement on the present method.

5. An attempt is now being made, at my suggestion, to record the area and yield of mixed cotton and *korra* separately in Guntur and the Deccan, and the result of this experiment will throw light on the general problem.

6. Even in ryotwari districts it is not uncommon to find the area under one crop reported under another. Some of such mistakes are detected in my office by a comparative study of the figures, others escape notice.

(*a*) (*ii*) A useful check on the estimated yields published in the season and Crop Report was provided by the Rail-borne Trade Returns which furnished the only available information about the inland movement of the crops. These

returns were abolished in 1922 and they should be restored in the improved form recommended by the Board of Agriculture in 1924. Orders have recently been issued that rail-borne returns should be compiled and published monthly for cotton, but what is urgently needed is similar returns for all crops which will show their movement from district to district. Statistics can only be improved if this is done.

(*b*) A statistical department should be attached to each Provincial Government similar to the Department of Statistics for India at Calcutta. This latter compiles returns sent in by Provinces and has no means of judging of the degree of accuracy of such returns. A Provincial Department would have a wide field of usefulness with regard to accuracy and it could address itself to the task of working out in detail and giving effect to lines of improvement suggested by bodies like the Prices Enquiry Committee, the Weights and Measures Committee, the Indian Cotton Committee, the Sugar Commission, and the Industrial Commission. At present recommendations made by such Committees are apt to be ignored for lack of funds and staff.

2. In Madras a statistical section is attached to the Director of Agriculture's office, but there is need for more clerical staff, and also for the establishment of a staff of itinerary officers to examine the actual registering of statistics in taluk offices, and to give advice on improvements.

3. It is also necessary to carry out a large number of crop cutting experiments each year on the main crops if real accuracy as regards yields is to be obtained, and the system should also be extended to minor crops. At present the staff of the Agricultural Department does not admit of this being done. What is needed is a special crop cutting staff who could be employed in non-harvest time as extra demonstrators.

Oral Evidence.

9277. *The Chairman:* Mr. Anstead, you are Director of Agriculture in the Presidency of Madras?—Yes.

9278. I do not know whether you would care at this stage to make any statement of a general character or whether you would like to proceed at once to question and answer?—I think I would like to proceed at once to question and answer.

9279. Would you tell the Commission at the outset what your own training and experiences have been?—I took a Natural Science degree at Cambridge in 1899; from there I went to the West Indies as a member of the Imperial Department of Agriculture under Sir Daniel Morris. Out there I was Research Chemist; then I worked as a Sugar Chemist in Barbados at the headquarters station; from there I took charge of the whole of the agricultural organisation in Granada; from there I came over to the Indian Service and was employed as a Scientific Adviser to the planting districts in Southern India under the Government of Madras. From there I took my present office of Director of Agriculture. I am myself a Research Chemist.

9280. The Commission is greatly obliged to you for the very complete note of evidence that you have placed before us, and which is, I take it, to be read in conjunction with the series of monographs provided from the services in this Province, in the shape of a file which you probably have before you?—Yes.

9281. Would you give the Commission an account of the organisation of your staff in the Presidency. First will you give us an account of the central staff in the College here directly under you, with some account of the division of duties as between the various Heads of Departments, and then some indication of the disposition of the staff of the Agriculture Department through the districts of the Presidency? Now, first for the staff immediately under you in the College for doing research, teaching and so on?—Yes. Here at the college all the research of the Department is done; this is not only a teaching college, it is also a research institute. We have a system of what we call sections for each subject, with a research officer, an Imperial officer, at the head of each of those sections. Those sections at present consist of a Chemistry Section, an Entomological Section, a Mycological Section and a Botanical Section. Then, in addition to that, the other research officers are plant breeders who are also stationed here with laboratories in the big College, and little farms of their own, plant breeding stations. Of those directly under me, we have first of all a Paddy Specialist with the station that I had the pleasure of showing you and the other members of the Commission yesterday afternoon; then we have a similar thing for cotton, a Cotton Specialist with his own station; we have a Millet Specialist, that is the last one; we have just started that post. That officer again has his own station. Each of these sections have their own staff of assistants in the Provincial Service; they are responsible to me for the work of their own sections; and I look on these research officers as my advisers on their particular branches. Then the teaching staff here consists of a Professor of Agriculture with a number of teaching Assistants. That teaching is done on a time-table of which I have control. The teaching is the University course; we are affiliated with the University of Madras; it leads up to the Madras University degree of Bachelor of Science in Agriculture. The University of Madras of course impose their rules on us for examinations and the standard of the course.

9282. Is all the teaching done here?—All the teaching is done here. At the present time there are about 80 students and it is a three years' course. The central farm is mainly used for teaching students; we try to grow as many of the crops as will grow here and as are representative of the Presidency. The course is largely a practical one; the students have to carry out all the operations of agriculture with their own hands. All these officers are directly responsible to me.

9283. Are all the officers who are charged with the duty of teaching doing a certain amount of research work?—No; not very much. We do allow them to do research work, and they engage in the long vacation in doing research

work. The research officers themselves, though they do not teach directly, do give a certain number of lectures to the students and the students of course see what is being done in the research sections. The teaching assistant in entomology and the teaching assistant in mycology are assistants on the staff of the research officers. So that, the students have every opportunity of seeing exactly what is going on in the research being done here and are kept up to date in it.

9284. You think that the inter-action between research and teaching has been beneficial to both?—I think so.

9285. Do your research workers complain that their educational duties interfere with their technical work?—No.

9286. That is the whole picture as regards the essential organisation?—That is the picture here at Coimbatore.

9287. Now, will you give the Commission a general view of the disposition of the staff of the Agricultural Department in the districts, and at the same time let us know what grade of officer holds each position?—May I refer you to the map which is at the end of my Administration Report which I have placed before you? That map shows exactly where the circles are and where the men are posted. We have divided the Presidency into eight circles. Each one of these circles is in charge of what we call a Deputy Director; he is an Imperial officer. He is directly responsible to me for the work in the circle; the district work, all the propaganda work; and in many of these circles there is an experimental station, that is to say, a farm on which the research work done here is first of all tested out in the district before it can be put out to the ryots. That farm is in charge of the Deputy Director in each circle. On this map, the round red spots are the headquarter stations of the Deputy Directors; the round green spots are the experimental stations that I am talking about. Under each Deputy Director there are a number of what are called Agricultural Demonstrators who are scattered about all over the Presidency to do the actual demonstration and propaganda work with the ryots. Those demonstrators are in the Subordinate Provincial Service and they are recruited from men who have passed through this college and have taken their agricultural degree. They are employed by the Government for this work, and all my staff in the districts have passed through this college at one time or another, including even farm managers. In fact we do not employ, if we can help it, any man who has not passed through this college or some similar agricultural college outside this Presidency. The majority of the men are our own men who have been through this college. Many of these Deputy Directors have risen from the ranks and were themselves students trained at this college. The Agricultural Demonstrators are scattered about as widely as possible so as to cover as big an area as possible. At the present moment the actual area that each one works over is, on the average, about two taluks, which is far too big, but we are limited by the number of these men and we have to do what we can. As you will see on this map the black dots are where the headquarters of the Agricultural Demonstrators are. You will see there are a very large number of white blanks where we have not done any work at all, or practically none; that is for want of staff. We concentrate on the areas round about these black dots. All these men are responsible, first of all, to the Deputy Director, who is responsible to me for the work. I tour about, visit the circles, discuss what work should be done and how it should be done, with the Deputy Directors; they themselves are responsible for getting it done in that particular way.

9288. Before you go any further, do these blank spots where you have not been able to place men correspond approximately with the dry areas in the Presidency, or is there no connection between them and the dry areas?—There is not very much connection; but a great deal of it is dry area. We have rather concentrated on the wet areas and the garden land, but there is no real direct connection in that way.

9289. But you have concentrated on irrigated areas?—Yes; the reason for that, if I may say so, is that when this department was started some 20 years

ago we started our work on paddy as being the most important crop in this Presidency for two reasons; first of all it is a food crop and secondly it is the biggest crop. There are 11 million acres of paddy in this Presidency. We started with that, and we have done more work and gone further with paddy perhaps than anything else. We naturally concentrated on paddy work. Then after that we have concentrated very particularly upon cotton work, especially all round Coimbatore.

9290. Now, on another question of general application; what organisation have you here for recording the administrative experience of the department? Have I made the question clear?—No, not quite clear. Do you mean publications?

9291. I mean this: Have you a record office here which is a store-house of information, a depository of past experience and which is capable at short notice of providing the Director with all the information bearing on a particular problem whether historical or current?—No, not exactly that; we have to hunt it out of the libraries; we have a very good library here at the college; we have a complete set of publications on work which has been done in other Provinces. We should have to hunt it all out ourselves; there is no record office to which I can go and ask for information.

9292. Is not that felt as a want?—I do not think we have felt it as a want; we have always hunted up all our own information and we keep a complete set of records of our own.

9293. You do keep complete records of your own; you do not have to hunt through large volumes of documents and papers?—No; if I had to start an entirely new subject, I should have to do that but we should do it for ourselves.

9294. So that, on the whole, you cannot say that there is any place for a machine of that nature?—I do not think so.

9295. I take it that, broadly speaking, the allocation of functions between your department and the Secretariat is that you are responsible for keeping the records of the technical matters and the Secretariat, in the main, is responsible for keeping the records of the administrative work?—Yes.

9296. Have you found that the Secretariat provides you with accurate and full information about past administrative experience?—Yes; I have no complaints to make about that; I can always get the information that I ask for from the Secretariat.

9297. Now may I take you into the body of your note of evidence? You state there very plainly your view about the Central Research Institute at Pusa. The Commission is anxious to hear your candid view about Pusa. If you would rather give such information *in camera*, I shall take an opportunity later on of clearing the room; otherwise, perhaps, you would let us hear now what you have to say?—I think I am prepared to let you hear now what I have to say on the matter. I do not quite know how the discussion will go, but may I say at any moment if I would like to stop?

9298. You can stop whenever you like?—Then I should like to start in public if I may.

9299. Very well?—As far as this Presidency is concerned, in some ways we have always found Pusa very useful, but in some ways it is not of use to us. For one thing, as I said just now, one of our great problems here is paddy, and paddy cannot be grown at Pusa; therefore Pusa as far as that crop is concerned, is not of very great use to us, except on very general problems. But I look on Pusa as being a central research station, where fundamental problems can be worked out, which is of enormous value to us. We take those discoveries up and work them out here to see how they fit local conditions; and in that way we use Pusa and have found it extremely valuable. We also find visits from the Imperial officers of great use to us, or we used to; nowadays we cannot get them as much as I would like to have them because I cannot afford to pay for them. The travelling allowances of an Imperial officer who comes from Pusa to a Province are charged to that Province. Very often it is impossible to find that money and so I cannot have the Imperial officers

as much as I should like; but I have had a lot of help from Pusa, and I look on Pusa as being a very valuable asset.

9300. You divide in your note the works of fundamental importance which may properly be done at the Central Research Institute, from the application of such fundamental principles to local problems which in your view is better carried out in provincial institutes?—I feel they must be carried out in provincial institutes.

9301. On the question of Pusa as an institute concerned with the fundamentals of research, what have you to say about the capacity, prestige and reputation of Pusa on that score?—I think the prestige of Pusa is a very high one; I think they are perfectly capable of carrying out fundamental research and have done some remarkably good work. The scientific staff of Pusa is of the very highest, and it has been partly recruited from the Provinces. Two of our Madras men have been taken out to go to Pusa. I think it has a very high standard.

9302. So that, you have no criticism of Pusa to offer on that ground?—No criticism on that ground, none at all.

9303. Is there anything which you wish to say about the teaching at Pusa? —I do not think Pusa is capable of giving a complete training to research officers or district officers who are to be heads of sections in the Provincial Governments, in all cases. I say that for several reasons; I think it is much more important that such men should get their training abroad, because Pusa, after all, is a comparatively new place, and I lay a lot of stress on what I describe as the " atmosphere " of the place where you learn. In England, or Germany, or any other part of Europe, you go to a University or a station like Rothamstead, that has been doing wonderful work for 60 or 70 years, or if it is a University, for hundreds of years. The atmosphere of training that you get there to my mind is all important; Pusa could never give that atmosphere. Then there is another point; the men at Pusa who are engaged in research are also engaged in teaching, and I very much doubt whether a man can both conduct research and teach; I think that he is bound to devote much more attention to his research than to his teaching. It is not always the good research man who is able to teach; the teacher, I think, is rather born. Another thing is that, after all, the men at Pusa are engaged in work there; they stay out long periods at work, three or four years at a time, without going home; so that, I think, they are bound to be out of touch with the latest methods. Possibly they may read about them, but even if they have it is not the same thing as seeing them done and seeing them carried out all round you as you find in a station at home like Rothamstead. For that reason, I do not think Pusa is the best place to train the men we want; I would much rather that they were actually trained at home.

9304. What you say is of course subject to your own experience here that teaching and research can be combined to the advantage of both?—Yes, but I am afraid, possibly, I may have misled you. I did not quite follow your original question; it is my fault. Here my research officers, the heads of sections, do not do any teaching; they have teaching assistants who do the teaching. The men actually engaged in research do not teach; my Chemist, for instance, does no teaching at all.

9305. But they are in touch?—Yes.

9306. And meeting daily the men who are teaching?—That is true; but they do not have the bother of lecturing and dealing with the students.

9307. Is it not of some importance that they should be in touch with the students, even though they are not in direct personal touch with them?—Yes, it is important, as long as the man is not taken off his actual research.

9308. It is a question of having adequate staff reasonably divided between teaching and research?—Yes.

9309. On page 33 I see you are definitely of opinion that there is serious lack of co-ordination and inter-communication between Province and Province?—Yes.

9310. You would probably agree with me that it is easy to exaggerate the danger of duplication of work; it is sometimes useful to have results checked by investigators at a distance?—Yes, I do agree with that; it is very valuable at times.

9311. So that, you do not aim at what I may call geometrical accuracy in the distribution of research. You would not object to a certain amount of overlapping?—No.

9312. But your desire is to obtain a reasonable degree of co-ordination and inter-communication?—Yes.

9313. So you turn to the expedient of a Central Advisory Board?—Yes.

9314. How do you conceive that Board as being constituted?—I conceive that Board as being constituted very much on the lines of the present Indian Central Cotton Committee. It should be a Board on which all classes interested in agriculture should be represented; the science side, the actual cultivators and big landholders, the important Rajas and Zamindars, the trades concerned, the big shipping people, railways, irrigation; everybody in any way connected with agriculture should be represented on it as a representative Board. Then I conceive of that Board appointing, and appointing very carefully indeed, committees to deal with the research work necessary for each crop; that is to say, there would be a number of committees dealing with each crop and also with the veterinary work, and possibly with co-operation. Those committees would have funds at their disposal, and would actually lay down the policy and the work that was to be done in research; if it were necessary to appoint men to carry out that research, they should be appointed and chosen exactly along the lines of the Indian Central Cotton Committee, which I look on as an almost ideal organisation.

9315. But, of course, your Central Advisory Board would be dealing with all crops?—Yes.

9316. Do you conceive the Central Advisory Board as having control over funds, or the right to recommend the allocation of funds?—Yes.

9317. What funds?—They must have some funds, and the funds should be provided by the Government of India.

9318. But what funds do you suggest?—Do you mean how to raise them?

9319. Do you suggest they should be Central Government funds?—Yes.

9320. Have you any suggestions to make as to how those funds might be raised?—Yes, by a cess. In the same way that the funds for the Indian Central Cotton Committee are raised I would have a cess; I think you could put a cess on most crops.

9321. Would it be an export cess?—Yes.

9322. Do you think it would be reasonable to disburse funds, the result of a cess upon export trade, upon cultivators and upon crops not concerned with the export business?—I think that would be fair for the total good of the country.

9323. *Mr. Calvert:* Why do you suggest an export cess? Why not an acreage cess?—I think an export cess would be very much easier to collect. It is going to be very difficult to collect an acreage cess, especially where you have a rotation of crops.

9324. *Professor Gangulee:* Do you suggest an export cess on all crops?—Not necessarily on all crops; on some crops, you could not have an export cess, but you could on big crops; for instance, I would put an export cess on oil-seeds; on cotton there is one already; I would have one on oil-seeds certainly, and I would have one on paddy.

9325. *Mr. Calvert:* What proportion of the paddy is exported?—A great deal is exported.

9326. What proportion?—I could not tell you straight off.

9327. Would it be 5 per cent?—It is more than that I think; I am not sure; I would like to get the figures and tell you.

9328. Your export cess would have to be that multiple of an acreage cess which your home-consumed product bears to the amount exported; that is to say, if 5 per cent of the rice produced is exported, your export cess on rice would be 20 times the acreage cess?—Yes.

9329. Then why not an acreage cess of one-twentieth of the weight?—My reason for not advocating an acreage cess is that I think it would be such a very difficult thing to collect.

9330. It could be collected with the land revenue?—I think it would be difficult.

9331. *The Chairman:* How do you conceive the Provinces standing in relation to your Central Advisory Board? Where would the initiative lie?—The initiative would lie with the Central Board.

9332. As regards the particular problem, would the Central Board suggest the problem?—I think very often they would, but sometimes the Province would suggest the problem.

9333. And the Province would go to the Central Advisory Board and say, "Here is our problem, please bless us and give us some financial assistance?" —Yes.

9334. Would that give an opportunity to the Central Advisory Board to look at the problem, to divide it into its component parts, and if necessary to allocate some fundamental part of the problem to, let us say, Pusa?—Yes, exactly.

9335. And to correlate that work with the works known to be going on in other Provinces?—Yes, exactly.

9336. But it would be open to the Province to withdraw at any moment, of course, at the sacrifice of any financial assistance which the Central Advisory Board might be inclined to give? There would be no compulsion upon the Province?—No; there would be no compulsion.

9337. In your experience do you take the view that a scheme of that nature could be conducted without any invasion of the position of the Provincial Government in relation to agriculture?—Yes; I think so; we have experience here, if I may again quote the Indian Central Cotton Committee. We have in this Presidency a cotton problem connected with a somewhat mysterious disease; we find that a very large proportion, 40 or 50 per cent, of the actual bolls produced, fall off and never produce cotton at all. It probaby is not a disease; we cannot find any particular organism. It is a very big and fundamental problem; we in this Province are not able to tackle it; we have neither the staff nor the money to tackle it. The Indian Central Cotton Committee have decided that it is a problem which must be attacked. They are providing the staff, two men who are being selected in England, a Botanist and a Chemist, to take up this study and they are putting up Rs. 50,000; they have decided that the work should be done at Coimbatore. These men are going to be sent to us, the Central Committee are going to finance them and we on our side say we will give them every facility for doing the work. We shall find accommodation for them here both in regard to bungalows and laboratories and shall put everything, including land, at their disposal. It will work perfectly smoothly; there will be no friction whatever as far as I can see.

9338. I assume that you accept both the Provincialisation and the making of Agriculture a Transferred subject, as something permanent in India?—Yes.

9339. So that your opinion, I take it, is that any scheme which was suggested and which because of its bearing on those two points did not commend itself to the Provinces would be doomed to failure from the start?—Yes.

9340. On page 34, paragraph 11, there is just one point. You are clear that there is a lack of sufficient knowledge in any one Province of what is going on in other Provinces. I assume that the mere reading of published accounts of work done in other Provinces is not a sufficient guide to what is going on. Is that your view?—Yes. It is not a sufficient guide. It is of the utmost importance that one should be able to talk things over with men who are doing similar work, who have probably done a lot of work which they

cannot publish. My idea, if I may say so, is, that men working on the same subject should be able to get together and discuss their difficulties.

9341. You think the money spent on these journeys is well spent?—Very well spent, indeed.

9342. Turning to page 34 you say in paragraph 14, "As regards men for research work, I do not think that really suitable men can be found as a general rule (of course there are exceptions) in this country and it is necessary, in the first place, to recruit European research officers to start the work and train their own Indian assistants who can ultimately take their places." That process is going on at this moment in this Province, is it not?—Yes.

9343. But in your view it would not be in the interests of the country to take the final step before it is perfectly clear that the Indian officer who is to take on the work is capable of maintaining the high standard already attained?—I think it is absolutely essential that we should have the very best men that we can get irrespective of what their nationality is; it is the best men that we want always.

9344. There is not merely a shortage in India of the very best; there is a world shortage of the very best?—Yes.

9345. Do you think the short-term contract is proving a success?—No. I do not like the idea of it at all; I do not think it is going to attract the best men. We have experience of one man here on a short-term contract, but he has only just come. I do not think you are going to get the best men on the short-term contract, for this reason, that at the end of the contract the man becomes unemployed and his prospects are not particularly good; he is always risking unemployment. In these days it is no joke to come to the end of a job and have to look for another at the end of every five years. Therefore I do not think it will attract the best men. I think it may attract men at the beginning of their career; it is not so bad for a young man to take his first job like that but a more senior man, I think, would hesitate long before accepting such an appointment; I know I should.

9346. At the same time, of course, any general appointment of officers from overseas on contracts other than short-term contracts would be difficult to reconcile with the principle that Indianisation should proceed as fast as thoroughly competent Indian officers can be trained and appointed?—That is true.

9347. So that probably a half-way house is what you are aiming at?—We must aim at a half-way house.

9348. With regard to paragraph 15 on page 34, will you tell the Commission at what stage in his career you think an Indian research worker trained in India should proceed to Europe or America?—That depends to some extent on the man, but in general terms I would like the man to have had about ten years in the Service at least before he goes.

9349. What age would he be then before he leaves this country?—He would then be round about 30.

9350. Your experience is quite definite in this respect, that you prefer that an Indian should be trained in India than that he should proceed as a young man overseas to be trained?—Yes; I think he ought to have the local knowledge first and give us an opportunity of seeing whether he is going to be a likely man for the work.

9351. Now would you turn to page 35 of your note? Are you satisfied with the standard attained by a graduate in this Presidency?—Not altogether.

9352. In what respect are you dissatisfied?—I think they do not know enough; they have not got sufficient literary education when they come to begin their degree course; their English is weak; that is what I am mainly dissatisfied about; we do not have sufficiently good material to work on during the course.

9353. *Dr. Hyder:* Do you take Intermediate students of the Madras University?—Yes.

9354. *The Chairman:* During the first year of what course?—During their degree course here; I would like them to be better educated when they come.

9355. *Sir Henry Lawrence:* At what stage do they come?—They come after they pass their Intermediate; they come from the colleges.

9356. *Professor Gangulee:* Intermediate Arts or Intermediate Science?—Intermediate Science.

9357. *The Chairman:* What about their scientific equipment when they come to begin their course?—It is very poor. They know practically nothing. Even if they have taken their Intermediate in Science they know very little.

9358. How about the scientific attainments of the degree student after he has taken his degree?—The scientific attainment is good enough for the purpose for which we want him.

9359. Is it your view that men who are best qualified for the post-graduate training are at any rate qualified in pure science?—We have no post-graduate training here.

9360. No post-graduate training here at all?—No.

9361. Are you training no research students at all?—What we generally do in the way of training research workers is that after a man has taken his degree he gets a definite appointment with the Government as Assistant to a research officer; then he goes into that section and the research officer teaches him as it were.

9362. So that he has the advantage of both a salary and post-graduate training?—Yes.

9363. What is his equipment in pure science?—His equipment is just what we can give him here, but he has a lot more to learn.

9364. What do you say about his equipment in pure science when he comes to you as an officer appointed for post-graduate training?—I think it is sufficient; we can teach him the rest easily enough.

9365. The inference is that he has managed during his degree course to make up the leeway and to overcome the limitations, which in your view are serious, in students who come up for the degree course?—Yes. We give him a really good grounding in that course in science; he is always a little bit weak in English, but I do not know that that matters very much.

9366. On page 35, in answer to question 2, you say, "It must be admitted that all forms of agricultural education so far tried in this Presidency have resulted in failure." Are you really inclined to think that the fact that your students when they leave this college aspire to offices in the public service is a mark of failure?—Yes.

9367. Somebody must fill the public services, must they not?—That is true, but my complaint is that no student would come to this college at all if he did not think he would get a Government post.

9368. So that, to the extent to which an agricultural college is a training ground for public service, you think you have been successful, but to the extent to which an agricultural college is concerned with training agriculturists to return to the land and to work there on a commercial basis, you think you have failed?—Yes, exactly.

9369. Is it within your knowledge that other countries have to contend with the same difficulty?—Yes, I notice that most places complain of this difficulty.

9370. Do you know of any country which does not complain of the same difficulty?—No, I do not.

9371. Is it your view that you would have had more success in the second category (that is, the training of agriculturists proper) if you had elected to train them at an institution other than that at which you were training officers for the public service?—Yes, that is what I wish to do.

9372. Do you think that close touch with men ambitious for public service disturbs the minds of those who come here in the first place with the intention of returning to the farm?—I do not think I would put it like that.

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9373. Will you put it in your own way?—What I would like to do is to train men who wish to go back to their farms in a technical school devoted to that purpose in which the training would consist of as little science as possible and as much practice as possible; I would give that training in the vernacular and not in English at all; every word of it should be in the vernacular.

9374. *Mr. Calvert:* Would you not have difficulty with regard to terminology; for instance "sulphate of ammonia"?—I think that difficulty would be overcome, because even now in the Tamil language a great many words have been simply taken bodily from the English language. They would call it "sulphate of ammonia." From the point of view of teaching a farmer I would not mind if it was called what the ryot calls sulphate of ammonia. The ryot always refers to it as "sugar." I do not think it would matter as long as people knew what they were talking about.

9375. *The Chairman:* Have you pursued the after-careers of students who have left your college and who have not gone into the public service?—We do not keep a careful record or register of them, but I know pretty well what has become of all of them.

9376. Do you not think that a persistent attempt to keep accurate records of after-careers might, at the end of 15 or 20 years, be a very useful thing?—Yes, I think it would.

9377. I gather from the general trend of your note that you are strongly of opinion that in the earlier stages of education, literacy is the goal of modern general education?—Yes.

9378. But you do think that a certain amount of nature study can be given without any loss of direction in that respect?—Yes, I feel very strongly upon that point; I would like, in the primary schools, to see nature study introduced as a central subject, so to speak, and all the other subjects, reading, writing and arithmetic, built up round that nature study. I think that could be done very easily; if you are teaching small children to read there is no reason why they should not learn to read by reading about nature study subjects. All the teaching, dictation and arithmetic could be bound up with nature study and deal with agricultural subjects, nature subjects. I would like to see nature study a central subject round which primary education should be built up.

9379. One has to be very careful in discussing these matters to distinguish between words and facts. What size of class has the ordinary teacher in this Presidency got to deal with in a primary school?—I suppose about 20.

9380. A teacher would take 20 children between the ages of 6 and 10. Is that approximately correct?—Yes.

9381. Would you agree with me that to take 20 children between the ages of 6 and 10 into a garden for half an hour, and give those children, 20 of them mind you, a good talk on nature, is one of the most difficult things that you can ask a person to do?—It is difficult, but it can be done.

9382. I am sure it can, but you do really mean it is a very difficult work to do well?—I do.

9383. What percentage of teachers in the primary schools in this Presidency do you suppose are capable of doing that?—Very few indeed, at present.

9384. What constructive suggestion have you for equipping those teachers with the necessary knowledge?—The teachers in this Presidency go to a training school to begin with and that training school should teach them how to teach nature study.

9385. I see you are quite clear that a small school garden and not a school farm is what is required?—For nature study, yes.

9386. What size of plot do you recommend?—I do not think it need be big; I do not want all my nature study taught in a stereotyped way in a school garden; I want the children to be taught outside; I want them to be taught about the weeds that grow in their own fields, about the trees that they can see round the school, the life history of butterflies and things like that.

For that you do not necessarily want a garden at all; I could teach nature study in a town.

9387. You are not at all sure that gardens are necessary?—They are not necessary, though I think they are a useful adjunct.

9388. On page 36 you give a description in paragraph 10 of the sort of school you are thinking of, designed to encourage boys to return to the land. Is that the purely vernacular institution that you were describing just now? —Yes, I would have it all in the vernacular.

9389. I see you intend to teach the rudiments of pure science?—You must teach the rudiments; just enough to explain the operations that you are carrying out. If I may take an example, if you are going to teach a student it is a good thing to plough a little better than the country plough does, you have to show him why, and therefore you have to teach him the rudiments of soil physics. But I would not go further than that; I would go just far enough to enable him to understand why a particular operation is necessary and no further.

9390. In paragraph 12 on the same page you are dealing with the tendencies that bring about this disinclination to return to the land, and you think you see a possibility of the experience of unemployment on the part of those who have been trained in provincial life and public life having its effect on the village boys in their choice of a career. Do you, in fact, see the slightest sign of this tendency?—Not the slightest, but I think it is bound to come in time. My feeling is that there is no demand for agricultural education in this Presidency for its own sake at all, and we cannot do anything until that demand exists. It is no good talking about schools until we get the demand. At present there is no demand, but I think that demand is bound to come by a process of starvation in time.

9391. On page 37 you say you believe that one of the best ways of making agriculture more attractive to the people is by improving the conditions of village life. Has the co-operative movement undertaken this work in this Presidency?—It has, but it has not got very far with it.

9392. Through the medium of better-living societies, or how?—Yes.

9393. Have you got such a thing as a better-living society in the Presidency?—We have got some sort of health societies, but very few of them.

9394. Are they founded on a co-operative basis?—No, they are not, not on pure co-operation.

9395. So that your co-operative organisation as such has not passed beyond the stage of providing credit?—Exactly; that is all that is done.

9396. You recommend the revival of the panchayat?—Yes.

9397. Have you studied the history of the ancient panchayats?—Not deeply, but I think a great deal could be done by the panchayats, and is being done in many places.

9398. In the old days a village isolated by lack of communications had to manage its own affairs for better or for worse?—Yes.

9399. So that some system of village government was inevitable?—Yes.

9400. But in these days you have communications and you have effective administration and judicial systems conducted from outside the village, so that in those fundamental matters there is no longer a need for communal government on a panchayat basis?—True, but then the panchayat, instead of doing that, might take up these questions of improvement of health and sanitation, and so on.

9401. So that the panchayat really becomes only a name; it has no connection with the institution which in ancient days used to be known by that name—Yes, that is so.

9402. *Dr. Hyder:* Your panchayats working in certain directions have been a success. Could you tell us why the panchayats here are a success?—No, I am afraid I could not.

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9403. *Dewan Bahadur Raghavayya:* Is there a strong village feeling, and in spite of the rapid development of communications does not each village feel it is a separate entity? Has not the movement which started a few years ago succeeded in many cases?—I think it has.

The Chairman: Am I not right in thinking that in the old days there was a series of panchayats, one in each community?

Dewan Bahadur Raghavayya: Yes, in some cases.

9404. *The Chairman:* On page 37 you say; "The problem is both of recent date and complicated. Before the unsettling influences of English education, every young man found his calling determined for him by his elders or by the custom and tradition of his caste." I suggest to you that you are over-emphasising the disturbing influence of English education and perhaps rather forgetting the inevitable disturbance resulting from the outer world breaking in upon these village communities, due to improved communications and trade with the outer world. Do you agree?—Yes.

9405. I think you give on page 3 of the general memorandum in the file of memoranda provided for the Commission some time ago an account of the staff dealing with demonstration work?—Yes.

9406. How do you divide responsibility at the top as between Research and Demonstration; have you a particular officer who is charged with the duty of organising demonstrations?—Each Deputy Director is responsible for that in his own circle.

9407. But what is the position at the centre, in this College?—Research men have nothing to do with demonstration.

9408. Who does organise demonstration and propaganda here in Coimbatore in a general way over the whole Province; do you do it yourself?—I do it myself.

9409. I had an idea that one of your Deputy Directors was specially charged with the duty of over-looking demonstration and propaganda throughout the Province?—No.

9410. You emphasise the immense importance of demonstration on the cultivator's own plot. Who takes the risk in regard to those demonstrations; the cultivator or the Government?—It is a point which has never been settled, but there is no risk; we never demonstrate anything unless we know it will be a success.

9411. Is not that the sort of risk that you would be prepared to undertake?—I should be perfectly prepared to take it, yes.

9412. You say that this plan is being pursued up and down the Province. It is being pursued, I take it, at those centres which you pointed out on the map?—Yes.

9413. Are experiments on cultivators' fields being carried out at all those centres, or have you demonstration plots under the control of the department?—Demonstration plots under control of the department. We never carry out an experiment on a ryot's field if we can possibly help it, for two reasons; first of all, there is the risk that you mention, and one failure puts one back far more than a number of successes bring one forward. Another thing is that in my opinion you never can carry out an experiment which is of any value on a ryot's field, because you are very hazy about the results, and you know nothing about the probable errors and that sort of thing. It is unscientific to experiment on a ryot's field.

9414. Perhaps I used the wrong word; I mean all your demonstrations are being carried out on the cultivators' own plots, and your experiments on your own farms?—Yes; all our experiments are carried out on our own experimental farms; nowhere else.

9415. Have you applied yourselves to the problems of dry cultivation in this Presidency?—Yes; to a certain extent along the west coast, especially in Malabar.

9416. And on the higher tracts? You have tracts of dry cultivation at a higher altitude than the one you have mentioned, have you not?—No, not very high.

9417. They are all low, are they?—Directly we get up here we get the big rainfall and we get the jungle.

9418. I understood there was an intermediate zone?—Along the West coast there is, but it is only 500 or 600 feet; it is on the dry hill tops; we have done a great deal of work there.

9419. How far do you think you have been successful in demonstrating improved dry cultivation?—Locally we have been very successful. What has happened is this; we have a farm on the West coast at Taliparamba, half-way up the West coast. That is in a dry tract; on that farm we did dry farming and started our own methods; and now all the hills around for many miles are covered with that cultivation, carried out by ryots who have copied us. The same is the case in connection with coconut cultivation; it has been a success, but it is slow. A great deal of work remains to be done yet, but on the whole it has been successful.

9420. Where is the principal famine area in this Province?—One of the worst is Bellary, right up in the north.

9421. Would you describe the agricultural practices in that tract; what are the major crops there?—The major crops are millets and cotton; it is a famine area because along there the monsoon very often fails. During the last three years, for instance, and until this year, they have had practically no rain at all.

9422. That is a dry area?—It is a dry zone.

9423. How many stations have you in that area for demonstrating improved tillage and cultivation?—We have a farm at Hagari, but we have not done very much work along that line; nothing like as much as we should do.

9424. Does it not occur to you that that is one of the points most requiring attention from the Agricultural Department?—It is.

9425. How do you account for the fact that your department has not applied itself towards the solution of the agricultural problems of these famine areas?—Purely owing to lack of staff and money. As a matter of fact we have a scheme that has been before Government for some time for doing definite work on that very problem, but we have not yet got either the staff or the money for it; it is still under consideration.

9426. *Dr. Hyder:* Could not you transfer some of your activities from the wet areas and make a fair distribution of men between dry and wet areas?—That could be done. It is a question of balancing problems, but in my opinion it would be a pity to stop the work we are doing.

9427. *The Chairman:* I fully realise what you say; but I still have some difficulty in accounting for the fact that you have applied what men and money you have to districts not subject to famine while you have not applied your men and means to those districts which are liable to famine?—We do not think it is a sufficiently big problem. If I may say so, with the present means of communication famine can be dealt with; you can get food to people very quickly.

9428. What was the most important famine you had there?—We have never had a serious one there in my experience.

9429. How long have you known the district?—In 1924 there was a small famine; but during the 20 years I have been here they have not had any serious famine.

9430. Is it still called a famine area?—We still call it a famine area; but people do not starve and die nowadays; famine can be dealt with.

9431. But of course the standard of living in that area is low?—It is low, yes.

9432. Do you agree that, short of the preservation of life, one of the first duties of your department is to apply itself to the problems of those areas,

where the cultivator is on the very margin of subsistence?—True, but I must not let you get the impression which I am afraid I have given you, that we have done nothing; we have done a good deal, although we ought to do a good deal more, I admit, and we would do more if we had the staff and money. The truth of the matter is that we want more research on what to do in areas like that; unless we know that, I do not think we can do anything; and I do not think we ever shall know that until we have a good soil physicist at Pusa.

9433. Do you not think that enough is known already to give the hope of greatly increased yields, in years of partial drought, as the result of better cultivation and better rotation?—Better cultivation, certainly.

9434. Not better rotation but better cultivation?—Better cultivation, yes.

9435. And yet you have no station in that particular area designed to demonstrate better cultivation?—Yes, we have.

9436. I beg your pardon; I thought you said you had none?—Yes, there is a station at Hagari, and another one at Nandyal, where ordinary methods of cultivation are demonstrated.

9437. *Dr. Hyder:* Have you got one at Cuddappah?—We have no station at Cuddappah, but we have a demonstrator there.

9438. At Kurnool?—At Kurnool we have a demonstrator.

9439. *The Chairman:* How long have those stations been opened?—Hagari and Nandyal were two of the earliest stations in the Presidency.

9440. Have they been a success?—Yes, there has been a very big improvement in the cotton cultivation.

9441. Have you an agricultural economist on your staff?—We have no agricultural economist.

9442. Do you think an appointment of that sort would be an advantage?—It would be an advantage.

9443. Do you think it is urgently called for?—Not so urgently as others.

9444. Will you turn to page 38? What is the approximate average number of villages in a taluk in the Presidency?—It varies enormously; the size of the taluks varies and the number of villages in them varies enormously.

9445. You have no figure in your mind?—No.

9446. *Dewan Bahadur Raghavayya:* From 50 to 200?—Yes, from 50 to 200; they vary as widely as that.

9447. *The Chairman:* On page 39, you say, "In addition to the above, we have a few large demonstration plots, which we call demonstration areas. This is, at present, an experiment. It is an acceptance of the challenge that what the department teaches is not adapted to practical farming, and that what may be demonstrated on a small plot is not necessarily successful on a larger area." That is a very familiar argument. But how comes it that demonstration on the ryot's own holding which, I presume, is begun as part of the ryot's general scheme of cultivation, does not meet this challenge?—I think it does; but it is a challenge which has been flung at us so often, very often not by the ryot but in the Legislative Council.

9448. I should have thought the first answer, the answer of the demonstration plot on the ryot's own holding, was the best answer of the two?—It is not quite a complete answer, because the demonstration plot on the ryot's own farm is always a very small one. It is very often a quarter of an acre, and they say that what one can do on a quarter of an acre one cannot do on ten acres. So I said I would show them that that was not true.

9449. They cannot have it both ways. First they say, what you can do on ten acres, you cannot do on a quarter of an acre; then they say, what you can do on a quarter of an acre you cannot do on 10 acres; but if the ryot has 8 or 10 acres, I should have thought the demonstration of a particular crop by that method on half an acre would be an ideal exposition of the possibilities of the practice?—I agree; but other people do hold the same view, unfortunately.

9450. On page 39, you point out the extreme difficulty of getting really satisfactory cinema films prepared?—Yes.

9451. If I may say so as one who has had some experience, in another field, of the difficulty of getting demonstration and propaganda films prepared, I entirely agree with you; but of course it can be done. It is a highly technical art, the people who have it are few and they must be properly paid?—Yes.

9452. Would you support a proposal to have a propaganda bureau, particularly a bureau concerned with the preparation of films, as a central institution in the country?—I would support it very strongly if I were assured that it would really be done properly. What I am afraid of is the exhibition of poor films, because people will say "If it is like that we will not do it." I want very good films; if these are got and the exhibition done properly I should support the idea very strongly. I foresee a difficulty, however, about showing them. I think that again will have to be in the hands of fairly skilled men, who will take the films round. The ordinary projector is not a particularly easy thing to handle. I have tried one. You have to put it in the hands of a fairly intelligent man.

9453. I do not think that presents any great difficulty; I think people who have learnt to drive motor cars in a week will easily learn the art of projecting cinema pictures?—It is very easy to set fire to the film, especially when it is being shown in villages in tents and that sort of thing where you have no buildings. If the film caught fire there would be trouble.

9454. Demonstration through an opaque screen in the open air is best in these days?—Yes.

9455. Those are technical difficulties which can be met very easily?—The point I want to make is that if it is to be done it should be done by skilled men.

9456. Do you attach importance to it if it can be done?—Yes.

9457. Do you think it is a promising line?—It is very promising if it can be done well.

9458. Would you agree that practices which do not promise substantial returns are, in the nature of things, unlikely to attract cultivators who are in debt? A three, four or five per cent increase in output is not a great attraction, is it?—No.

9459. It is when you reach 15 or 20 per cent?—Yes.

9460. That is your experience in this Presidency?—Yes.

9461. What use has been made of co-operative organisations for the purposes of demonstration and propaganda?—Well, as much as possible. Wherever I can persuade a co-operative society to run a demonstration area of their own I do so, and a certain number of them is doing very good work in that direction; but there are not enough. A great number of these societies are not interested in that kind of work at all.

9462. *Dewan Bahadur Raghavayya:* They have just made a start at Lalgudi?—That is true; the Lalgudi one is a particularly good one; but there ought to be a great many more.

9463. It is a very recent one?—Yes.

9464. *The Chairman:* Talking about agricultural indebtedness, can you provide the Commission with any detailed statistical statement of the state of debt in this Presidency?—I could not do that; I have no means of finding out.

9465. Could you get those figures?—No.

9466. Can you tell the Commission what proportion of the debt is secured and what unsecured?—I have no information.

9467. Do you know the extent of the mortgage debt?—I have no information on those points.

9468. Do you think the problem can be envisaged as a whole until those fundamental facts have been ascertained?—No, probably not, I think they should be ascertained.

9469. They have not been ascertained?—No.

9470. *Dewan Bahadur Raghavayya:* Cannot you get figures from the Registration Department?—Only for mortgages; that is all.

9471. *The Chairman:* Perhaps you would see whether figures of that sort can be provided?—Yes, you could get the mortgages, but that is not the complete story.

9472. I agree that mortgages are not everything, but they would be something?—Yes.

9473. And so far they are better than nothing?—Yes, we could get you those figures.

9474. You say education has contributed its share in piling up debt; do you mean the expense on education has proved unremunerative?—The expense on education at the Universities; there is this tendency on the part of parents to send their boys to a University for an expensive training.

9475. So that the education has proved unremunerative?—Yes.

9476. Among the poor, you say drink is a powerful factor in keeping the depressed and the cooly classes where they are. Is that because of its physiological effect, or because of the expense?—It is the physiological effect.

9477. *Dr. Hyder:* Does the ryot also send his son to the University? We are concerned with the indebtedness of the ryot?—Yes, he has a tendency to do that.

9478. And for that purpose, he is getting into debt?—Yes, I think that is one of the factors.

9479. *The Chairman:* The cost of drink is also an important consideration amongst the lower-paid wage earners?—True, it is.

9480. You have not provided us with any answer to question 4, Administration. There are just one or two questions which I should like to ask you on that. Do you find that the railway authorities pay attention to any request that you may put forward for the construction of branch and feeder lines?—Yes. A good many lines have been made in this Presidency, and a lot more are projected.

9481. *Dr. Hyder:* Are you or the public satisfied with the branch line rules made by the Government of India?—I think so.

9482. *The Chairman:* So you have no complaint against the railways on that score?—I have no complaints against them.

9483. What is your opinion about the service rendered by the railways and the charges levied?—I have no great complaint against the railways on that score; they have reduced the charges, and I very much doubt whether, from the railway point of view, they could reduce them very much more. After all, the railways have got to pay and, on the whole, though we keep on worrying them, they have treated us rather well in this Presidency.

9484. Do you ever make applications for reduced rates on particular products?—Yes.

9485. They have been met sympathetically?—They have been met sympathetically on the whole; we do not get all we ask for; but I think they give us all they can in reason.

9486. How about the Local Railway Advisory Committee?—I do not know much about it.

9487. What avenue has the cultivator by which he can bring any grievance he may feel against the railways to the notice of the authorities?—He would do that through the Collector of the district.

9488. Is it within your knowledge that if the cultivator makes a complaint it cannot go up to higher authority until the cultivator deposits Rs. 100?—No.

9489. Of course, that is not necessarily a ground of complaint?—No.

9490. Are you satisfied with the roads in the Presidency?—I am not; the roads are getting steadily worse.

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9491. To what do you attribute that fact?—To the fact that now the roads have been handed over to the District Boards, and the District Boards do not spend sufficient money on them; they spend their money on other things, like education, schools, hospitals, etc., and they do not keep up the roads. The roads in this Presidency are nothing like as good as they were 10 or 15 years ago.

9492. Have you any suggestions for improving the position?—I am afraid not, except, if I may use the expression, "gingering up" the District Boards.

9493. How are you going to do that?—I do not know; it must be done in some way or other.

9494. Would you suggest that where a District Board has failed and failed badly in its duty in the matter of roads that for a period at any rate that particular responsibility should be removed from it?—I agree with that.

9495. I do not know that that would hold any particular terrors for the District Boards?—No, probably not.

9496. But it might improve the roads?—Yes.

9497. *Dr. Hyder:* Is not the money collected at the toll barriers spent on the improvement of the District Board roads?—It is not earmarked for the roads; it goes into the general funds.

9498. Are you sure of it?—I think so.

9499. *Professor Gangulee:* Is there no such thing as a road cess?—No. I am told now that the money received from toll bars is earmarked.

9500. *The Chairman:* Does the Meteorological Service give you as much help as may be in its power to give?—At present it does not give us any help at all.

9501. Do you think it ought to?—I do not think it can.

9502. You do not think that the Meteorological Department can do anything for agriculture?—Very little, unless they can forecast what the monsoon is going to be like at least two months ahead, and I take it that that is impossible. It would be of some assistance if they could do it.

9503. Do you think if they could forecast the monsoon two months ahead, that would be an important contribution to your problem?—I do.

9504. How about the Post Office?—I do not think the posts can help us at all.

9505. Does the Post Office not conduct a savings bank?—Yes.

9506. Is not that a direction in which they could help you?—It is a general direction.

9507. Do you not think that the habit of saving amongst the agriculturists is one of the most important virtues which can be encouraged?—Yes, certainly.

9508. Do you not think that the Post Office could help you there by taking upon itself the duty of popularising the savings system?—Yes. That is a view which had not struck me.

9509. Do you envisage the day when every village will have a broadcasting receiver?—I suppose ultimately, yes. At present, of course, we are a very long way from that; we are hardly linked up even in Madras. There is very little wireless to be had.

9510. Do you think it will come?—I think it is bound to come. Personally, I think wireless is going to change the whole face of the world in quite a short time. I envisage being able to talk very easily with England.

9511. Have savings certificates been pushed at all by any organisation?—Not to my knowledge.

9512. But you will agree that this question of investing the surplus margin in a good season is very important?—Certainly.

9513. Meantime, all such savings are invested in ornaments for women?—That is a common custom of the country.

9514. That is a practice which to my knowledge is almost universal?—Yes, it is almost universal.

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9515. I suggest to you that the wealth so utilised is not necessarily wasted; is it not the case that the ornaments are usually pledged in famine periods?—Yes, I think that putting the savings into ornaments is merely a form of investment; it is considered safe.

9516. And it is available as a source of credit?—Yes, or it can always be turned into money.

9517. *Dr. Hyder:* What do you think is the value of the total amount of silver ornaments which a gaily decked bride of a ryot wears?—I do not know.

9518. *The Chairman:* How long have you been in this Presidency?—Twenty years.

9519. With regard to question 6 of our Questionnaire (Agricultural Indebtedness) are you familiar with the statutes, whether All-India or provincial, which deal with the question of debt or credit?—No, I am afraid I have not made a study of that.

9520. Are you familiar with the practice of advancing *taccavi* loans in the Presidency?—No; again, I do not know very much about it.

9521. Have you applied yourself to the problem of long-term credit at all?—No, only in a very general way. That part of the work I rather look upon as being the duty of the Co-operative Department, which is an entirely separate department. I am in close touch with that department, I meet the Registrar, and we talk things over a great deal, but that is as far as it goes.

9522. I do not want to press you on the point, as you have told us that you have not applied yourself to it, but surely in the matter of *taccavi* it is not quite correct to say that co-operative organisations are alone concerned with it, is it?—No, not in the case of *taccavi*.

9523. On page 40, dealing with our question 6 (*b*) you say, "special measures to rehabilitate the indebted ryot and to prevent his land being auctioned by the moneylender seem to be urgently needed." Is the whole of the scheme which you adumbrate designed to deal with existing debt, and not to provide long-term credits for improvements?—I think it could do both, but existing debt is the first thing to get rid of.

9524. You make a suggestion in paragraph 3 for the preliminary financing of such a scheme, and you say "*e.g.*, from postal savings bank funds or cash certificates." So that you do lean upon the Post Office a little?—Yes.

9525. You say further "there would not be much recurring expenditure as there would be a steady inflow of instalments year after year." Do you know the rate of interest paid to investors in the Post Office savings fund?—I do not at the moment, no.

Dewan Bahadur Raghavayya: It is 3 per cent.

9526. *The Chairman:* Is that money on demand; is it liable to be produced at call?—Yes.

9527. I do not want to take you into this unless you have seriously considered the financial proposal that you have made; but do you think it possible to finance a scheme for long-term credit on funds liable to be produced at call? If it is only a general suggestion I will not pursue the matter?—It is a general suggestion.

9528. You make a proposal for the provision of land mortgage banks under Government auspices. How far has this idea proceeded in your Presidency? Is this just a suggestion from you or is it in the air?—It is in the air.

9529. Nothing so far has been done?—No.

9530. Do you know anything about the specific proposals for the setting up of these land mortgage banks?—No, it is merely a proposal of mine.

Dewan Bahadur Raghavayya: Two banks have just started working.

9531. *The Chairman:* I notice you do not give us an answer to our question 7 (Fragmentation of Holdings) although you have been good enough, as a Presidency officer, to provide us with a monograph on that question?—I have sent you a note on that question.

9532. Have you accurate facts and statistics as to fragmentation in the Presidency?—No, I have not, but they could be got.

9533. Are they available?—They are not available; they will have to be got.

9534. Does that mean that they have been amassed but not arranged, or that they have not yet been collected?—It means that they will have to be collected from all the villages; they are there but we should have to collect them.

9535. They are there I suppose on the land revenue records?—Yes; they would have to be put together.

9536. The matter has not gone any further than that?—No. We could not possibly get them collected in time for this Commission.

9537. I should like to ask you a question or two in regard to your answer on page 41. What so-called major irrigation schemes have you in this Presidency?—Beginning in the north, there is a very big canal centre in the Godavari all round Vizagapatam, right down. There is a big canal irrigation scheme run from the river. And then there is the big Mettur project which is now being constructed and which is an enormous affair. Then there is another project here at the foot of these hills, which will bring water, irrigation, light and power into Coimbatore; it is projected but not completed.

9538. What degree of touch is there between you and your department on the one hand and the Irrigation Department on the other?—None whatever.

9539. Would you agree with me that no irrigation problem is without its agricultural problem?—I agree very strongly.

9540. How do you account for the fact that there is no touch between these two departments?—I cannot account for it; it always has been so.

9541. *Dr. Hyder:* Is it due to the land revenue system here, where you have consolidated assessment for water and revenue, that the Irrigation Department is more in touch with the Land Revenue Department than with your Department?—That probably is the reason, yes.

9542. *Dewan Bahadur Raghavayya:* Before undertaking big schemes of irrigation do not the Land Revenue Department now consult the Agricultural Department as to the suitability of the soil, adaptability to irrigation and so on?—They do in a very tentative way. A few projects have been sent to the Director for his opinion. But no notice is taken of one's opinion.

9543. *The Chairman:* That is not quite the same thing as not consulting?—That is true; but I may point out that on the Mettur project, the new one, we have never been consulted at all.

9544. May I ask you when you first heard of the Bhavani scheme?—When I was living here at Coimbatore.

9545. About how long ago?—Before the War.

9546. Do you know how that scheme is proceeding at the moment?—No. I understand it is hung up.

9547. Have you ever been consulted about the agricultural problems connected with that scheme?—No.

9548. Do you wish to make any specific complaints or to make any suggestions with regard to this absence of touch between the Departments?—Yes. I would like to suggest that the Director of Agriculture should be a member of the Irrigation Board.

9549. How about your Provincial Board of Agriculture?—We have not got one.

9550. You have nothing of that sort?—No, no Provincial Board of Agriculture

9551. You have no consultative or general Board of that sort which brings together round a table every one interested in agriculture?—We have nothing of that sort.

9552. Then how about the minor schemes? Have you in this Presidency any officer charged with the duty of advising the cultivators as to minor irrigation works?—No.

9553. Is it your view that a great deal might be done to increase the productivity of the soil of this Presidency by minor irrigation works?—Yes, I think a great deal could be done. What I particularly wish to emphasise is that existing works, existing tanks and existing channels should be kept in order.

9554. You will be glad to see even the existing works kept in order?—Yes.

9555. You say, "There should be a special branch of the Irrigation Department whose business it should be to remedy these evils and to keep in thorough repair all the existing irrigation facilities." Do you mean major and minor?—No. I am speaking of minor works here.

9556. *Sir Ganga Ram:* Do the Irrigation Department get any revenue from these minor tanks?—No, probably they do not, but there is always the water-tax and the land-tax.

9557. *Dewan Bahadur Raghavayya:* Is there not a minor irrigation staff attached to each district working under the Collector, a staff of supervisors and overseers?—There is, yes; but they do not get these things done. I want a Special Irrigation Officer who will see that they are done.

9558. *The Chairman:* Is well-irrigation in the Presidency being pushed?—Yes; that is being pushed up to a point; the pumping and boring is done by the Industries Department and they help the people.

9559. We shall of course ask the officer responsible for the technical details; but I wondered whether on this subject of wells there was anything you wished to say as to the measure of touch between the two departments?—No, no more than what I have said. We are out of touch with the Irrigation people.

9560. Have you water-logging problems in this Presidency?—Not very serious ones.

9561. Have you the alkaline problem?—Again not a very serious one.

9562. By not very serious, what do you mean?—I mean that there is not a very big area of alkaline land, and it is alkaline land which can be handled; all that is necessary is to grow a big, bulky green dressing on it and plough it in.

9563. Have you in mind that the fact a certain amount of water-logged and also of salt land exists is a warning that it might spread?—Yes. We are watching that. We keep our eye on that very carefully.

9564. Have you any schemes here, not for irrigation in the ordinary sense, but for occasional soakage of the soil? That is to say, small schemes designed to give a group of ryots enough water to soak their ground, say, two or three times?—That is to say, small tanks?

9565. Yes. That is the sort of scheme which you have in mind when you say that an extension might be brought about?—Yes. A great many of these tanks exist all over the Presidency, but they are apt to fall into disrepair and it seems to be nobody's business to keep them in repair. I want that sort of thing looked to more carefully.

9566. Have you found that in matters on which you and the Irrigation Department must, in the nature of things, come together, you agree with the Irrigation Department? How about the advice of these two departments as to the amount of water required to grow sugarcane?—We do not agree. As a matter of fact in this Presidency we have really done very little work indeed upon the question how much water is in fact required for the crop.

9567. But yet, in spite of that, you manage to disagree with the Irrigation Department?—Yes, that is true.

9568. What gallonage do you as a department recommend for sugarcane?—We have not gone as far as that.

9569. *Professor Gangulee:* Do you carry on any investigation on the water requirements of sugarcane?—No. We are just now beginning to try and find out. The sugarcane station which you saw yesterday is a Government of India station. We have no station of our own, but we are just opening a station of our own at Anakapalle. There I am definitely preparing to carry out systematic research work as to the amount of water required for sugarcane, and I have got sanction to put down all my water channels in cement; so that it is a piece of new work.

9570. *Mr. Calvert:* But sugarcane occupies a very minute area, does it not?—No.

9571. 100,000 acres?—Yes.

9572. But that is nothing?—Nothing compared with some other Provinces; but still it is a good area in this Province.

9573. Nothing compared with 39,000,000 acres of your total area?—No.

9574. *The Chairman:* Have you anything to say as to the method of charging for water? Which method do you recommend, the volumetric basis or the acreage basis?—I should like to recommend the volumetric basis, but I see the difficulties of carrying it out.

9575. You think it is the ideal basis?—I think it is ideal, but I admit the difficulties.

9576. And you have nothing more which you wish to say on that subject?—No.

9577. You do not give us any answer to our question 9, with regard to soils. I am sure you must have a great deal of information which is material on that question?—I am afraid my answers are not very complete, because I had such a very short time within which to prepare that note. But I would like to mention that, with regard to question 9, I have answered it in answering other questions.

9578. Are you satisfied with what you are doing here as to research on soils?—I am satisfied with what we have done; but I want to do a lot more.

9579. Have you problems of denudation and reclamation before you, denudation due to flooding of deforested areas?—Yes; there are those problems but they are not very big problems here.

9580. Not very important in this Presidency?—Not very important.

9581. I should have thought that in the hill country here they were very substantial?—No; on our hills nearly all the cultivation is being carried out by big companies who are growing tea, rubber, coffee and that sort of thing; the rest of it is forest and heavy jungle, and the planters, as a whole, have been taught to stop all soil erosion. When I came here originally I found that there was a good deal of that; I introduced systems of green dressing, trenching, pitting and so on, which have been very successful and are now an almost universal practice; a tremendous lot of denudation has been stopped.

9582. Is there no cutting down of virgin forest above the level of forest plantations?—No.

9583. So that you do not think the shocking calamities of 1925 were in any way due to faulty practices?—No.

9584. But were entirely due to the immense rainfall in a short time?—Entirely.

9585. How about improving and reclaiming lands by the deposit of silt? Is that a practice which has been worked out in this Presidency at all?—No. We have done nothing of that sort.

9586. You probably know that in many parts of Italy, for instance, most important and fertile tracts have been built up by the able application of the principle of carrying silt by water and depositing it where it is required?—Yes. In this Presidency nothing of that sort has been done; but a similar thing is being done in Travancore.

9587. On page 41, question 10, you give a list of the fertilisers exported. But before proceeding to that I should like to ask if you have anything to

say as to the use of night-soil as manure. Is that practice in existence in this Presidency at all?—Yes, in certain places; especially round the towns you will get people to take it. But on the whole in this Presidency there is a strong caste objection to using night-soil.

9588. Do you think that the manufacture of manure from night-soil will overcome the prejudice?—I think it might, particularly if it were by a process like the activated sludge process which would eliminate all smell and appearance and leave the manure in the form of nice, clean organic matter.

9589. Do you think, in view of the enormous expense of fertilisers and the large population in this Presidency, that that problem is one which might well receive the attention of your department?—Yes. It is receiving the attention of my department.

9590. Work is being done?—Work is being done up to a point. I would like to have an activated sludge process linked up with the drainage system of every big town; that is a point of view that I have done my utmost to teach, to preach about and to lecture about. The difficulty arises in getting the municipality to do it. There are one or two schemes being put down now; there is one at Madura, and there is a big scheme in connection with Madras, which I believe is to have an activated sludge plant. But it is slow uphill work convincing people and it is an expensive thing.

9591. Does that leave a crude manure; is that the ultimate process?—No; it does not leave it in a crude state; you deal with night-soil and sewage as a whole and treat it bacterially; it leaves the mud at the end, which is the fertiliser. Sludge is a very valuable fertiliser.

9592. Is your department actually carrying out investigations in that direction?—No; I have asked for an activated sludge plant to be attached to this farm, but I have not yet got it; I hope to get it; I certainly think it is a thing I ought to have.

9593. You give a list of fertilisers exported from the Madras Presidency; you give the weight of bones exported in tons. Do you deplore that export?—I do deplore it; I want it stopped.

9594. *Dr. Hyder:* Do you want it prohibited?—Yes; prohibited.

9595. *The Chairman:* What is the limiting factor in this Presidency?—Phosphate.

9596. Quite definitely?—Quite definitely.

9597. *Professor Gangulee:* What about nitrogen?—That is not the limiting factor.

9598. *The Chairman:* Are superphosphates or is slag being imported?—Superphosphates are.

9599. Not basic slag?—Not basic slag to any extent.

9600. You give a list of imports of fertilisers into Ceylon; are those all from Madras?—To a very great extent.

9601. But not all? They are the figures of import from overseas into Ceylon, are they not?—My table of figures shows the imports into Ceylon of fertilisers from everywhere. I could give you figures showing how much goes from Madras to Ceylon.

9602. As it stands I really do not see that the table makes much contribution to the solution of the problem, because one does not know how much of these imports come from Madras and how much from elsewhere?—Most of these things do actually go to Ceylon from Madras. I put in the table to show how the price was going up.

9603. On page 43, paragraph 2, you say, "If the price can be brought low enough to ensure a profit by their use, there is no particular difficulty in persuading the ryots to use manures." Of course if you can bring the level of cultivation upwards that is the same thing, is it not?—Not altogether.

9604. It has the same effect? All I mean is that, if you introduce varieties of crops which are better qualified to make full use of the manures which

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are provided, then a price can be paid economically for the manure which with a poor quality of crop would not be economic?—Yes, that is true.

9605. Have you any figures of improved yield per acre in typical tracts of the Presidency as the result of applying various manures?—Yes.

9606. Could you provide us with those figures?—I can, yes.

9607. Perhaps you will put them in later on?—I will.

9608. With regard to this question of fertilisers in relation to research, do you feel that you are carrying out sufficient research on fertilisers?—Certainly not sufficient; but I am satisfied with the work that we have done, though it is certainly not sufficient. If I were to admit it was sufficient I should have to admit that research on that particular problem had finished, and I do not admit that. In view of the fact that even at Rothamsted new discoveries are being made in relation to manures, we cannot yet have done sufficient work out here.

9609. On page 43, paragraph 3 (*e*) (*1*) you say: "Discovering how rapidly the use of artificial manures used alone deteriorates the quality of grain . . ." What do you mean by "quality of grain"?—Its feeding value.

9610. Its feeding value to the human population?—This is a very big subject on which we have done a great deal of work in this Presidency and we rather think we are on the eve of a very great discovery. It would take a good deal of time to explain that to you; may I deal with that actually in the laboratory; I have got it all planned out there with all the graphs and everything else.

9611. I only wanted to know what you meant by the words "quality of grain." You are not concerned with the price on the market; you are concerned with the nutritive value?—Yes, I am concerned with the nutritive value. I should like to take you through that story in the laboratory from beginning to end.

9612. On page 44 you say you have not, in your view, had the resources at your disposal to give the attention to horticultural matters which they deserve. What have you by way of horticultural stations?—We have at Coonoor a very small fruit station where we are experimenting with varieties of plums and apples, and fruits of that sort. Half-way down the Ghat we have another little station where we can grow tropical fruits; at the foot of the Ghat we have a third station where we can grow oranges. They are all very small and work on them is very limited.

9613. Do you think fruit-growing can be undertaken by ryots?—I do not think it can be developed very widely; it will have to be confined to the hills; there is no reason why it should not be in the hands of the ryots in the hills. The main difficulty about fruit in this Presidency will centre around the transport to the markets.

9614. Where will the markets be?—The markets would be in the big towns like Madras. Transport will be our chief difficulty. But if one could grow apples and fruit that would travel well, I think a good deal could be done.

9615. Do you see any signs of cultivators in the hills taking up fruits?—Very little.

9616. *Dewan Bahadur Raghavayya:* Is not a good deal of tropical fruit grown in the plains?—A certain amount of oranges.

9617. Oranges, plantains and mangoes?—Yes; but not as a big industry. A good deal of plantains is grown, but otherwise it is not a big industry.

9618. *The Chairman:* Is the department attending at all to the question of tropical fruit-growing?—Yes; in particular we have done a fair amount of work on plantains.

9619. Have you a station?—We do some of that work at the Anakapalle station, where part of the work is devoted to plantain growing.

9620. Of course the tropical fruit problem is quite a different one from the hill fruit problem; is it not?—Quite a different one, yes.

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9621. The production of tropical fruit, if capable of extension, might make a very important addition to the ryot's means of livelihood?—Undoubtedly; all the way up the north-east of the Presidency there are great stretches of limes and oranges and that sort of tropical fruit, as to which we have done and are doing a certain amount of work, though we have not got a station.

9622. You would like to do more?—Yes; I should like to have a definite citrus station.

9623. On page 44, in answer to question 11 (*a*) (*iii*), you say, "There are in this Presidency no seedsmen of repute who can be trusted to take up this work." Do you think it would be a great advantage to agriculture in the Presidency if the distribution of good seed were to pass into reliable commercial hands?—Yes; if it passed into reliable commercial hands, I think it would be a great advantage.

9624. Has it ever occurred to you to consider the possibility of encouraging the venture by, let us say, a small subsidy on a declining scale or some expedient of that sort? You do not recommend it?—There is no starting point.

9625. Is the main difficulty the fact that seed at present, apart from that which you distribute, is in the main being distributed by those who lend money to cultivators?—Yes.

9626. On page 44, paragraph 4, you give what you conceive to be an ideal system of distributing seed. You probably conceive the co-operative societies as being even better distributors of seed than commercial people?—Yes, I do.

9627. Do you look forward to a day in the measurable future when these societies will be in a position to distribute seed?—I am afraid I personally am very pessimistic about co-operative societies in this or any other Presidency.

9628. So that when you say that the work of distribution of seed is really work which should be done by co-operative societies and that the Agricultural Department should not be hampered by the work of distribution at all, your policy there is really one of despair. You do not look forward to the co-operative societies being able to relieve you of this function?—Not in my time; I think one here and there will be able to do it, but as a general thing I think it will be many years before they can do it as a whole. Here and there one finds a society which can and will do it, but they will not be able to do it for the whole Presidency for a very long while.

9629. *Dewan Bahadur Raghavayya:* Some societies have taken over the sale of seed from you already?—One or two of the good ones, as an experiment.

9630. *The Chairman:* How about the details of your own machinery for distributing seed? This is very important; can you tell us any more than you have put in in your note?—No; I tried to put it in the note very fully, but I will go over it again if you wish.

9631. If you are satisfied there are no points of interest, I will not trouble? —I have nothing to add to that note and to the description in my Administration Report, as long as it is plain.

9632. On page 45, in answer to question 11 (*c*) of our Questionnaire, that is to say, asking whether any successful efforts in improving crops or substituting more profitable crops have come under your own observation, you talk about Cambodia cotton having required legislation and the passage into law of a Pest Act. Was that the Pest and Diseases Act of 1919?—It is a local Act, not the All-India Act.

9633. The Pest and Diseases Act of 1919 is mentioned later in your note, and I was wondering whether that was the same Act. Perhaps you would rather wait till we come to the second reference, and I will take you back to it?—Yes, it is the same Act.

9634. Would you make it much more rigorous than it is?—Very much more rigorous.

9635. Of course, Government is naturally sensitive about any compulsion?—True.

9636. Do you think public opinion is ripe for the extension of the Act in the direction you suggest?—I think so.

9637. On page 45 you talk about the extension of the ground-nut crop in recent years; you give the very considerable increase that has taken place in the past 22 or 23 years, and you say this extension is by no means an unmixed blessing. Is that because ground-nut has displaced food crops?—Yes; for no other reason.

9638. Do you think the standard of living of the cultivator in the country which you know here is likely to rise substantially as the result of any process other than the substitution of money crops for food crops?—No, I do not think it is.

9639. You think that a substantial increase in purchasing power can only result from an extension of the acreage, and an improvement in the yield, of money crops at the expense of food crops?—Yes, on the whole I do think that.

9640. Then why do you deplore the extension of ground-nuts?—Well, because the first duty of an agricultural country is to feed itself.

9641. You do not think that the ryot, given cash for a money crop, can always feed himself?—Not necessarily.

9642. Do you not think he can buy his food with the cash he secures for the money crops?—Not necessarily at all, because if your food crop runs short and you have to import food, immediately the price of food will go up, and you are in somebody else's hands.

9643. How do you reconcile that with your agreement (if you do agree) that no substantial and lasting improvement in the ryots' economic position can be attained by any means other than an increase in the amount of money-crops grown?—No, I think I must go back and say I do not agree with that; I did not quite see where that was leading to.

9644. *Dr. Hyder:* I ask you to consider this position. In a famine year you will have no food crops at all?—No.

9645. Then you have these prosperous years in which the cultivators grow money crops?—Yes.

9646. Now compare the first state of affairs with the second state of affairs. You say an agricultural country should grow foodstuffs. In a famine year there will be no food crops. If in good years the cultivators grow money crops, there is a probability of their having money to pay for imported food in a famine year; if they do not grow money crops, they will not be able to purchase imported food in the famine years?—That is so up to a point, but that does not imply that all the money got in a good year is saved up against a bad one. I do not agree that it is saved; it is spent.

9647. But the position would be the same if he grew food crops; in a famine year there will be no money and no food?—True; there will be no money or crop.

9648. So that I think the balance of advantage lies on the side of the money crops; because if he raises a money crop there is a chance that he may carry over some money to buy his food in a famine year; but if he grows a food crop, there will be no money and no food?—Yes, I see that.

9649. *The Chairman:* I suggest to you that this apparent paradox is to be explained in this way; that, given good selling of money crops and good buying of necessities; given also sufficient communications to make available at a reasonable price to the ryot foodstuffs and the necessities of life which he must buy, an increase in purchasing power, the result of the substitution of money crops for food crops, is in fact going to lead to an increased standard of living?—Yes, I agree.

9650. But, in the absence of those communications and good selling and buying by the ryot, persons other than the ryot get the benefit of the difference

between the value of the food crop and the value of the money crop, and the ryot is still left with hunger to face in years of famine?—I agree.

9651. Do you suggest any action to check the tendency described on page 45. "The rapid spread of ground-nut in recent years in the unirrigated tracts of the Circars and the Deccan, which are liable to frequent famine or scarcity, is a matter to be viewed with grave concern." Have you any positive measures in view now?—No.

9652. Now may I take you to page 48 of your note. Have you any striking examples of the successful introduction of agricultural machinery into the Presidency?—No striking examples.

9653. How about the sugar mill?—I should not call it striking. Iron sugar mills are undoubtedly spreading; they came linked together with the improved variety of cane, which is a very hard one which the country mill will not crush so that they had to have the iron mills.

9654. *Professor Gangulee:* What about the Monsoon plough?—The Monsoon plough is slowly becoming popular; we sell a great many of them; it is largely a question of price.

9655. *The Chairman:* Later on you say you think that there is a very promising opening for the introduction of improved implements of tillage based rather on a bettering of the indigenous tools and implements rather than upon any introduction of new machinery?—Yes.

9656. I suppose that in the interests of India you look forward to a thriving industry founded on a flourishing system of agriculture?—Yes.

9657. Do you think that Indian industrial enterprise is coming forward to meet the demand for improved agricultural implements?—It is not coming forward now; I think it would come forward.

9658. Can you suggest any way of encouraging that movement?—No; I am afraid I cannot. What I feel is that if one had a cheap and efficient plough that one could sell in such very large quantities as to make it worth while for a firm to take up its manufacture, there is no reason at all why a firm like Tata's should not be able to make it in India.

9659. So as to get the full advantage of the cheapness of mass production? —Yes.

9660. Is there any difficulty in the way of distribution of agricultural implements which you wish to bring before the Commission?—No, there is no difficulty about distributing them.

9661. Would you suggest that the instalment principle of payment, the price-down system or the hire system would be the best form by which you could extend the use of more expensive implements?—The hire system if anything; I do not think the instalment system will work; the hire system will be the better one.

9662. As regards question 15, Veterinary, you do not give us any ideas?—The Veterinary Department is a separate department.

9663. I quite understand that, but it touches you very closely, does it not? —True.

9664. Is there anything that you wish to say about the central institution at Muktesar? I am merely giving you the opportunity?—No, I have nothing special to say about Muktesar.

9665. What about the Provincial Department; is it in close touch and co-operation with you?—There is very close touch indeed.

9666. You are satisfied, are you?—Quite satisfied.

9667. How about veterinary skill in relation to the improvement of the breeds of animals? Are you getting there the help you are entitled to expect from the Veterinary Service?—Yes. We have a Veterinary Officer from the Veterinary Department attached to all our cattle farms to deal with disease. There is an officer at Hosur, and there is one here.

9668. Have you anything to bring before the Commission about the teaching of veterinary science?—No. I may put in a word about research. I think more veterinary research should be done in the Province; I should like to see more provincial veterinary research.

9669. Provincial veterinary research carried on at existing institutions?—Yes; at existing institutions; I want that done centrally and provincially in the same way as we are doing agriculture.

9670. On page 49, you speak of the Deputy Director of Agriculture, Mr. Littlewood. What is the exact function of that officer in relation to animal improvement?—He looks after all animal work; he has charge of what I may call the Presidency work; he looks after all the questions dealing with breeding and animal work all over the Presidency.

9671. Is he a whole-time cattle improvement officer?—Yes; with headquarters at Hosur.

9672. What is he styled?—Deputy Director of Agriculture, Livestock.

9673. You do not call him Cattle Improvement Officer?—No.

9674. Do you not think some title of that sort might make his function plainer to the public?—I do. I think there is no system with regard to most of the titles given to officers in my Department. They are very often inappropriate; I should like to have an improvement in that direction.

9675. On page 49 you go on to deal with dairying; you say it is not going to prove really profitable until the public is protected by law from inferior products put on the market. Do you suggest that public opinion is now ripe for legislation on this matter?—I think so.

9676. Do you suggest that there should be municipal rules or provincial legislation or an All-India Act?—I think it would be better if the legislation were Provincial.

9677. The urban population forms an overwhelming majority of the potential demand?—Yes. The matter is now under the consideration of the Madras Municipality; they are talking of introducing such legislation. I think they were and they certainly should.

9678. Are there no rules now?—No.

9679. I thought you had a Public Health Act in Madras?—Yes; but it does not deal with the question of pure food.

9680. That is definitely so, is it?—Yes, you can adulterate food as much as you like.

9681. *Dewan Bahadur Raghavayya:* Under the Madras City Muncipalities Act, the municipalities can control food?—They have the power, but they do not exercise it.

9682. They can frame bye-laws?—They can; but they do not.

9683. *The Chairman:* There are really three stages; the first is to do nothing; the second is to pass rules but not to enforce them; the third is both to pass and enforce rules. At what stage are you?—We are at the middle stage.

9684. *Dewan Bahadur Raghavayya:* There is an Act empowering the Corporation to do it?—Yes; but they have not done it yet.

9685. *The Chairman:* Have you anthing to say about the improvement of sheep?—We are doing a little work on that; we are trying to improve the quality of the wool and the weight of the clip.

9686. Do you think that sheep offer any promise for the future?—I do not think so in this Presidency; there are not sufficiently big grazing areas.

9687. *Dr. Hyder:* What about the Nilgiris?—In the Nilgiris sheep do not do particularly well, because they cannot stand up to that terrible monsoon: you get a very high death rate when you try rearing sheep in the Nilgiris. We tried to do it, the planters tried it, but in the big monsoon, owing to the cold, the wind and the rain, they die unless they are carefully sheltered, and that adds to the expenditure enormously.

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9688. *The Chairman:* Are you doing anything in the way of improving goats? —We have not touched that.

9689. The goat is a useful animal, is it not?—Yes. It is a useful animal but it is a serious nuisance. It does an enormous amount of damage to forest grazing areas.

9690. It gives good milk?—Yes, but it also does an immense amount of harm.

9691. *Dewan Bahadur Raghavayya:* Is not there a systematic campaign carried on for the destruction of goats in this Presidency?—I would not call it a systematic campaign, but many of the Forest Panchayats have determined to eliminate the goat because it does more damage than it is worth.

9692. *The Chairman:* Why is that so? Do you wish to see the goat eliminated from the Presidency?—No, by no means; I should like to see it controlled; but I certainly do not want to eliminate it by any means.

9693. I notice that there are more pigs in this neighbourhood than I have seen anywhere else in India. Is that an important industry?—It is not important; it depends a great deal on the caste of the people who keep and eat pigs; round here there are a great many people who do that.

9694. Have you any idea of the pig population of the Presidency?—None whatever; they are chiefly kept for food purposes.

9695. *Dr. Hyder:* Are they kept by the Panchamas?—Yes.

9696. They eat them?—Yes.

9697. *The Chairman:* I do not see any other reason for keeping pigs?—For making bacon.

9698. That is food?—Yes; I meant they were eaten direct.

9699. *Dr. Hyder:* Do the Panchamas supply the European population of the Madras Presidency and other areas with pigs?—No; all the pig that is eaten by Europeans is imported; we should be afraid to eat pigs bred in this country.

9700. *The Chairman:* On page 49, you say, "Large zamindars should be encouraged to establish pure-bred herds of country cattle." How do you propose to do that?—Merely by education and propaganda generally. When we are talking about encouraging zamindars, Rajas and big men to take up agriculture, I think a great deal could be done (it is beginning to be done now) if the Governors of Provinces and His Excellency the Viceroy showed that they took a personal interest in the matter. Lord Goschen, the Governor of Madras, who is a farmer and is very keen on farming, is doing that, and it is undoubtedly doing a lot of good. I should like to see more of that done; I think it is one way of improving things. If the really high officials like the Viceroy and Governors show that they are interested in agriculture and care about it and know about it, I think it would do an enormous amount of good where big men are concerned. His Excellency the Viceroy is at present going to see all the Government farms himself and to my mind he is doing an immense amount of good work.

9701. *Mr. Calvert:* Do you think if the Viceroy and Governors took an interest in cattle-breeding, as they do in horse shows, it might do a good deal for the cattle-breeding industry?—Yes. I understand Lord Willingdom did that; I should like to see more of that.

9702. How many premium bulls have you in the Province at the moment?—Twelve.

9703. Only 12?—That is all.

9704. Are you satisfied with that figure?—No; this is quite a new idea of ours. We have only been at it a very few years.

9705. Are they standing at a fee or free?—At a small fee.

9706. Do you think the fee is a deterring factor?—No, not if it is kept low; I think there should be a fee; I do not believe in giving things away; there is no value then set on them.

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9707. *Professor Gangulee:* How much do you charge?—8 annas or a rupee.

9708. Never more than a rupee?—No.

9709. *The Chairman:* Where are the best cattle in the Presidency?—In the Ongole tract.

9710. Is the difference as between the best and the average really noticeable?—Quite noticeable.

9711. Is the Ongole tract an area of enclosures? Is the land enclosed?—No, it is not enclosed.

9712. *Dewan Bahadur Raghavayya:* Is there not the *Kancha* system there to some extent?—To some extent; it is a very small extent, as far as I know.

9713. *The Chairman:* Do you associate the effect of enclosed pastures and enclosed land generally with the general improvement of cattle?—Yes, it would improve the cattle if we could do that.

9714. With regard to page 49, the herds of the Military dairy farms are of course founded entirely on the first cross between an imported bull and the local cow?—Yes.

9715. Is that cross highly economic and satisfactory as a producer of milk?—Yes.

9716. What about the next cross after the first cross? Is that a useful animal?—Quite useful.

9717. And the next?—The next also, I think; I have great hopes of this crossing; I think that we have some animals here that will show we are justified in that hope.

9718. Do you think that one of the results of this cross is likely to be an improvement in the indigenous breed?—Yes; as far as milk is concerned certainly.

9719. How about the cross as a contribution to the production of a dual purpose animal?—You will not get a dual purpose animal on that cross.

9720. Which are you inclined to back, the attempt to develop a good dual purpose animal or the attempt to specialise as between draft and milk?—I am backing both for their own particular purposes; where you want to do dairying and supply milk to big towns (which is one of our problems) I should be in favour of the cross; where you want animals for cultivation purposes, I should favour the Kangayam or the Ongole breed.

9721. Do you not think that one of the hopes of improving the breed of cattle in the countryside is the production of a dual purpose animal, which will make it possible for the cultivator to breed his own or his neighbour's working bullocks, and at the same time to get a reasonable return in milk from the dam of the working bullocks?—Yes, I agree, but I do not think that you can ever make a dairy pay as a dairy, with that kind of animal.

9722. So that the result of your cross with breeds from overseas is likely in the main to assist dairying industries founded on the urban demand for milk and milk products?—That is what it is intended to do. May I say, while we are on this point, that that is why, in this department, we have over and over again insisted on Government and elsewhere that we must do both kinds of work. At one time we were faced in this department by this attitude, "If you want to do cross breeding, why do you want these pure Indian herds?" We have emphasized that point because we must do both. At Hosur you saw I am not only doing my cross breeding, but also grading up pure bred herds of Ongole and Kangayam for that very reason.

9723. I quite understand that. On page 50, you are talking about improving the existing practice in animal husbandry. You say "In former years when a big man died in a village his relatives generally dedicated a bull to the temple. A committee of local breeders was immediately called." Then you go on to describe the manner in which that committee might be used for present-day needs. How is that committee to be constituted?—It would be a village panchayat, to a great extent.

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9724. How would it be chosen for this purpose? I take it it must command the confidence of breeders in the village?—Yes, it would be the headman, the elders and the priest of the temple, who do command the respect of the villagers.

9725. On page 50 you say, "Silage-making should be demonstrated in the breeding tracts by the Agricultural Demonstrators, especially in years of good rain when there will be an abundance of green fodder." Can you give the Commission, very shortly, a history of the attempts to popularise the silo in this Presidency?—When we first began work on these things, we were obsessed with the idea that silage should be made in a tower; we had tremendous failures with that system and I think it made all silage-making unpopular both in the department and outside the department. Now we have discovered that the way to make silage in this country is not in a tower but in a pit. Now that we have discovered that (I am afraid somewhat late in the day) we are trying to demonstrate it. But there is no doubt that we are suffering from the first mistakes which were made, many years ago, before there was a properly organised Agricultural Department for research. I think it is a very good example of how important it is to have organised research work instead of haphazard methods.

9726. When did you make the discovery that you could make silage in pits in the first place?—About 10 years ago.

9727. What steps did you take thereafter and up till now to popularise it?—We now make silage on all our experimental stations and demonstrate its use there.

9728. Do you carry it out as demonstration or propaganda on the cultivators' holdings?—It is very difficult to do it. We have done it in several places. At all our experimental stations we make it and use it and show the people how to do it.

9729. You told the Commission that the best way to persuade the ryot to adopt new methods was to go to his own farm, work under his own conditions, and show how it was done. Is that not applicable to the silage?—It cannot be done quite so easily.

9730. Why?—In the first place, the ryot must be growing a fodder crop from which to make it, which very often he is not. He must then agree that you may cut it and silage it, which he is not always willing to do; it is a very difficult thing to demonstrate in that way. To begin with you must have the ryot's permission to demonstrate on his land.

9731. I agree, but will he not give that permission?—He would perhaps give the permission, but very often he has not got the material in sufficient quantity for the demonstration. You want a fairly big area of fodder to cut and put into the pit. He is not always prepared to let you do that. You cannot demonstrate it on 30 or 40 cents. of land as you can with other things; that is the practical difficulty in demonstrating silage.

9732. *Professor Gangulee:* On page 39, you say that the ryots are a teachable body of men. How do you reconcile that with the statement you have just made?—I do reconcile it. You are trying to hurry me too much; give me time and I will teach him to make silage. I cannot teach him as quickly as I could teach him to transplant paddy, for instance. It may take 10 years.

9733. *The Chairman:* Do you agree with me that this system of silage may make a very important contribution towards solving one of the ryot's principal difficulties?—I am sure it will; and the light which has been thrown on the value of silage by animal nutrition work makes it still more important.

9734. What crops are you recommending as the best for silage?—Sugarcane. When you thin out the sugarcane that makes very good silage.

9735. What part of the cane do you use for making silage?—You cut out the suckers at the bottom.

9736. That means no sacrifice?—No; they have got to be thrown out in any case, and it is used as fodder. Then, very largely *cholam*, millet and *jowari* can be used.

9737. At what stage do you recommend the cultivator to cut his *cholam* for silage?—Just about when it begins to throw flower.

9738. That is a very difficult moment at which to see it go down the pit, is not it?—Yes. Sunflower we recommend as a crop for silage. We use that ourselves and it is a very useful crop for silage.

9739. Is there any forest grass here which would make good silage?—I do not know. I doubt it. We know very little about grasses.

9740. What about spear grass?—At Hosur that is what we are going to do; we have discovered that hay made out of spear grass is not of any great value; the cattle only just maintain themselves on it; so to get over the difficulty we are going to cut it early and make silage.

9741. With regard to what you say about the nutritive quality of hay made from spear grass, do you include hay made from spear grass before the spears harden?—Yes.

9742. Do you think the fact that the use of the silo involves double handling of the fodder is a serious disadvantage?—No.

9743. You think that the ryot would find a place for his pit quite close to where he feeds his stock?—I think he could quite easily and, after all, that sort of thing does not matter very much in this country. Where the ryot does his own work it is a question of labour and there is always labour to be had.

9744. We realised the other day at Hosur that in this climate it is necessary to cart your crop almost as you cut it unless you work early in the morning or very late at night, so as to prevent a degree of dryness occurring which prevents fermentation?—That is so.

9745. Is that a serious handicap to silage-making by the cultivators?—I would not call it serious, but it makes it more difficult.

9746. You have known for 10 years that silage should be made in a pit; can you tell the Commission how many ryots as such are to-day making silage? Very few indeed.

9747. Do you know of any?—Yes.

9748. About how many?—The Pattagar of Paliacottah, one of the bigger cattle breeders here, is making it.

9749. Is he a typical ryot?—No.

9750. Do you know of any typical ryot who is making silage?—No.

9751. Do you think that is due to some inherent difficulty, or due to a failure in propaganda, or due to the time which must inevitably elapse between the recommendation and demonstration of a process, however sound that process may be, and its adoption?—I think it is a combination of those factors; one very important fact is that the ryot does not usually grow enough fodder to make silage; he does not as a rule grow enough fodder to keep his cattle properly fed, his main area being taken up by crops like ground-nut, tobacco and others.

9752. Do you think that the practice would substantially improve the quality of the working bullocks in the Presidency?—I think it undoubtedly would, yes.

9753. And thereby make an important contribution to the fodder problem?—Yes.

9754. In view of what you said, do you feel yourself that your department is spending an adequate amount of time, money and attention in recommending the adoption of silage?—Yes; I think we are.

9755. *Sir Ganga Ram:* Have any big landholders in the Province taking to this?—Only the Pattagar of Paliacottah.

9756. You do not know of any other landholder who has taken to it?—No.

9757. *The Chairman:* On page 51, in paragraph 10, you are more hopeful about the use of the cinema than you were earlier?—May I point out that the note you are taking me through was written by Mr. Littlewood and not by me?

9758. But I want your views. I take it that you are responsible as regards the views put forward?—I am not more hopeful about the cinema, though Mr. Littlewood thinks that it could be done. I made that remark about the cinema in my introduction to this very note of Mr. Littlewood.

9759. I quite agree. But I am sure the Commission wishes to hear your views about cattle improvement and so on, because you are the responsible officer?—Yes.

9760. On page 51, paragraph 11, you say, "Milkmen's Co-operative Societies should be formed in large towns in order to purchase foodstuffs and fodder in bulk and so obtain it at a cheaper rate." Do you know what Mr. Littlewood refers to there? Is it co-operative societies of milkmen supplying the demand?—Yes; we have a Milkmen's Co-operative Society in Madras.

9761. Is that a co-operative dairy?—No. It is simply a society for getting cheaper foodstuffs and fodder in bulk.

9762. A buying society?—Yes.

9763. Is the demand for milk in Madras supplied in the main by milk from cows or by milk from buffaloes?—Milk from cows in the main.

9764. Is that the rule in this Presidency?—I think so, yes.

9765. You think that the cow supplies the greater part of the milk in this Presidency?—In the big towns, yes.

9766. But not in the rural areas?—I do not think so. It varies from area to area. In the towns as a whole it is supplied by cows. There are some places where people like buffalo milk much more.

9767. Do you think the public distinguishes between the two classes of milk?—I think so.

9768. By flavour?—Yes. Buffalo's milk is much richer in fat.

9769. You think the public prefers cow's milk?—I think the public in towns does certainly.

9770. You think the buffalo is a better milk-producer than the average country cow?—Yes, and it produces much richer milk.

9771. And more milk?—Yes.

9772. Do you feel that the amount of attention given to the buffalo is hindering the improvement of the cow as a milk-producer?—No. I would not say that. The buffalo is a very important animal; it is used almost entirely in some places for cultivation, especially in the very wet districts, because it can stand up to the wet and where it is used for that purpose it is also used for the dual purpose.

9773. On page 51, paragraph 11, you say, "Milkmen's Co-operative Societies should be formed in large towns in order to purchase foodstuffs and fodder in bulk and to obtain it at a cheaper rate. Advances should be given to milkmen for the purchase of fresh cows when their cows become dry." From what source do you suggest those advances might come?—From Government loans, or where there is a co-operative society they borrow from the banks.

9774. I only wanted to be certain that Mr. Littlewood is not suggesting any subvention of the dairying industry from the funds provided by the general taxpayer?—No.

9775. There is sometimes a tendency to forget that Government is merely another word for the general body of tax-payers?—Yes.

9776. *Mr. Calvert:* Mr. Littlewood has no objection to the advance being made from their own savings?—No.

9777. *The Chairman:* Do you think the cultivator on the whole is as well or better off than he was 20 years ago?—I think he is a good deal better off than he was.

9778. Then why do you suppose Mr. Littlewood, in paragraph 13, talks about "these hard times"?—Because times are still hard, though the cultivator is better off, they used to be harder.

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9779. So that it would have been plainer if he had talked about this hard world rather than these hard times?—Yes, it would.

9780. In regard to paragraph 14, on page 51, you say, "Steps should be taken to work out the different values of all Indian foodstuffs." Are you familiar with the work being carried out at the Animal Nutrition station of the Government of India at Bangalore?—Yes. I am working in very close co-operation with that station.

9781. Do you suggest that the work is after all of a fundamental character and completely within the category which you described in an earlier part of your note as being that which might suitably be dealt with by a central institution, or should it also be done by provincial organisation?—I think we ought to do exactly as I suggested for the whole system; the central organisation at Bangalore should work on the fundamental problems and the general questions, and we should take it up where it is necessary for our own local needs. In this particular case I should not expect Mr. Warth at Bangalore to work out the values for all the foodstuffs in the whole of India; he would only work on particular lines; it is our provincial duty to work out the nutritive value of our own local foodstuffs. That I consider we ought to do and we are taking steps to do it.

9782. Would you suggest keeping in close touch with Mr. Warth in the work that you are going to do?—The very closest. As to the work that I am now doing on animal nutrition, I lay all my schemes of work before Mr. Warth for his advice and opinion. He is always willing to advise.

9783. Do you think that the problem of animal nutrition is also capable of being broken up into two parts, a fundamental part and a part dealing with local application; and it is another illustration of the way in which work should be divided between the Central Government institution and the provincial institution?—Exactly.

9784. I want for my own information to be sure that I understand what Mr. Littlewood means when he says on page 51 that "ryots usually graze their cattle on the grass *bunds*." Is that a division between irrigated fields?—Yes.

9785. On page 52 you say, 'There is generally scarcity of fodder in the Coimbatore Dairy during the months of March and May." How much silage do you make in the Coimbatore Dairy?—Enough to carry us through the hot weather.

9786. That only means that on the land you have here there is a shortage of grazing?—Yes.

9787. And he means there is general scarcity of green fodder?—It would have been clearer if he had said "shortage of green fodder."

9788. Do you think green fodder is better than silage?—Yes.

9789. Have you asked Mr. Warth about that?—Yes.

9790. He told us the other day that he thought an experiment now being conducted showed that silage gave slightly better results?—So he tells me, but I want to see the results first.

9791. You stick to your own view?—Yes.

9792. On page 52 Mr. Littlewood says, "I suggest that grazing areas be free of tax in the ryots' holdings, and that each ryot should be compelled to grow a certain amount of fodder or straw sufficient to maintain the number of animals he keeps, and that his number of animals should be limited to his holding." Now, to divide that suggestion up into its component parts, I do not know whether you agree with any or all of this?—I agree about the grazing area being free of tax, but I do not agree to compulsion.

9793. Have you consulted the Revenue Department on that point?—I am afraid the Revenue Department would be against it.

9794. Because it means the sacrifice of revenue?—Yes, but that objection could be overridden.

9795. How do you mean?—If it were a better thing to do.

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9796. It is a question of degree?—Yes.

9797. Have you any figures in mind as to what it would cost?—No, I am afraid I have not.

9798. That after all is the point?—Yes, it will have to be worked out very carefully.

9799. *Dr. Hyder:* Mr. Littlewood says that in former days a certain portion of the area was tax-free; is that a reference to pre-British days or British days?—The pre-British days, I expect.

9800. He says, "I am informed that in former days the Ongole ryot who reserved one-fourth of his holding for grazing land was not taxed on this portion"?—I am afraid I cannot tell you where he got that information from.

9801. *The Chairman:* You are opposed to compulsion?—Yes, always.

9802. How about the number of animals being limited?—I am afraid you cannot do that without compulsion; but you must simply do what you can by teaching them.

9803. You would have to limit the advantage of the easement from taxation of grass lands to those ryots who kept an approved number?—Yes, you would have to do something of that sort.

9804. But you would probably find a group of cattle in the immediate neighbourhood of the village which, on that particular day, would be without owners?—Yes, but I think that difficulty could be overcome.

9805. Is there a demand from overseas for the indigenous cattle of this Presidency?—There is a big demand for Ongoles.

9806. Where?—They go to Ceylon, they go to Malay, and they have even gone as far away as South America.

9807. Have they gone to Brazil?—Yes, and that demand was so great that we had to stop the export of these cattle; it is forbidden now.

9808. Is it absolutely forbidden?—The export of that breed is absolutely forbidden.

9809. Are you in agreement with the policy of closing your ports to all export of cattle?—Certainly, of a breed like that.

9810. Why?—For this reason, that the people sell all their breeding bulls and all their best cows, and the stock runs down and down; that is exactly what did happen; so we stopped the export and built up the breed again. There was a great danger of that breed being entirely lost.

9811. When did you close the ports to that export?—About 15 years ago.

9812. You point to a steady deterioration in the cattle of the ryot going on to this day. Do you attribute that to the effects of export?—No, it was only on this particular breed that there was such a tremendous drain.

9813. Would you agree with me that the demand for pedigree animals overseas has been the great stimulus in Great Britain to the improvement of various breeds of cattle?—Yes, I agree.

9814. What effect, do you suppose, the closing of British ports to the export of British pedigree animals, particularly to the continent of America, would have had upon the breeding policy in Great Britain?—I agree that that would have been disastrous. But this case of the Ongoles was a particular case, and I approve of it.

9815. Do you want this embargo maintained?—I want to maintain it for sometime yet, but I think we could soon get to a state of things where we could take off the embargo. My difficulty is that, when it is taken off, I want some control as to the number of cattle and, particularly, what cattle may be exported.

9816. Do you not think reasonable control from the beginning would have been better than a hard and fast embargo?—From the beginning, yes; but when that export began, there was no Agricultural Department to advise on this sort of thing. When we first got control, it was far too late to control it.

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9817. Can you support these views by any figures of the estimated numbers of reasonably pure Ongoles exported?—I think I can get the figures. What I can safely say is this, that the breed has improved during the last 15 years a great deal, which is due to the closing of the ports.

9818. What has happened to the blood that went overseas; is there an Ongole breed in Brazil, for instance?—I imagine there is.

9819. Have you looked to that country at all for the means of a possible improvement of the indigenous cattle?—No.

9820. You have not thought of the possibility of importing bulls from Brazil?—No.

9821. You have not dealt with question 17 of our Questionnaire; it deals with Agricultural Industries. As the result of what I have heard recently, I should like to break up this question into two divisions: first, subsidiary industries proper, and secondly, spare-time occupations. With regard to those subsidiary industries of which the raw material is agricultural produce in one form or another, is any important extension of industries of that nature taking place at the present time in the Presidency?—No, I think not.

9822. Have hydro-electric schemes been developed in the Presidency in recent years?—No.

9823. Is there any project for hydro-electric development?—Yes, there are one or two projects.

9824. Do you think there is some hope that cheap power might induce manufacturers to venture on setting up factories?—Yes, I think there would be, but I foresee difficulties.

9825. Well, there are always difficulties?—Cheap power would help, there is no doubt about that.

9826. Do you think it would be a great advantage to the rural areas if hydro-electric power had the effect of dotting factories over the countryside rather than concentrating them at the ports?—I think that might be an advantage.

9827. It might have an important influence on raising the standard of living; might it not?—It would.

9828. Can you speak at all as to hydro-electric possibilities?—I am a bit sceptical about them; my difficulty is this, that it is a question of cost, to a great extent; it is a question of the cost of your power line. It is going to be a very costly thing to take your power line in this country from village to village, so to speak, for several reasons.

9829. Well, there is the obvious technical reason of stepping down in small units?—Yes.

9830. But, apart from that, of course, dotting your factories about the countryside is to be desired; instead of having to lead your power at great loss, you use your power near the source of production in the countryside?—Yes.

9831. Is any research going on in the Presidency, bearing on this question of working up agricultural products into finished articles or partly finished articles?—No, none at all.

9832. On the question of spare-time occupations, which is quite a different question, should I be right if I said that in your irrigated tracts your cultivators have no important amount of spare-time?—Yes, you are correct in saying that, particularly in the double cropped lands.

9833. It is different in the dry tracts?—Yes, very different.

9834. What has been done in the way of investigating and recommending spare-time occupations in this Presidency?—Very little indeed; the Industries Department have done a certain amount of work with silk and things of that sort, but the Agricultural Department have done nothing.

9835. Nothing at all?—No.

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9836. Have you any views that you wish to express on this question?—No, I do not think so. It seems to me that it is a matter primarily for the Industries Department with their technical knowledge.

9837. It is no doubt present to your mind that where there is spare-time, it can be, as it were, employed at a profit, even though, as compared with factory labour, it appears *primâ facie* to be uneconomic?—Yes.

9838. In other words, if you were doing nothing, you could save yourself a certain amount of expenditure by making yourself something which, if you do not make it, you would have to buy?—That is so.

9839. Although if you placed a factory wage value on your spare-time, you find it would pay you better to go and buy it?—Yes. The one difficulty I have in my mind with regard to any idea of subsidiary industries, what are usually called cottage industries, is the difficulty of marketing the goods when you have got them. In this country there is great difficulty in marketing the goods.

9840. In the case of cloth-making, for instance, the market is the man's own back?—Yes, that is a particularly good one, but it is more difficult with regard to basket-making and that sort of thing.

9841. Have you anything to say with regard to sericulture?—No, we do not deal with that; the sericulture work is done by the Industries Department.

9842. On question 18, Agricultural Labour, have you a labour shortage in any of your rural areas here?—There is not a great labour shortage anywhere; the plantations in certain areas do compete with the landholder for labour, but I do not call it a serious matter.

9843. Is there a serious surplus?—No.

9844. Is there any unemployment in any district?—No.

9845. So that, in your view, your labour here is well distributed over the work to be done?—Yes, I think we are well off in that respect.

9846. *Professor Gangulee:* What is your exact definition of the agricultural labourer; are you speaking of a landless man?—He may be landless; he may not have any land at all, or he may go off to labour in his own slack season, particularly to the planting districts.

9847. *The Chairman:* With regard to question 19, Forests, do you think there is adequate touch between the Agricultural Department and the Forest Department?—I think there is; again, we work on very close terms; I can always get what I want out of the Forest Department.

9848. Has it ever occurred to you that by attaching forest officers for a short period to the Agricultural Department and employing them in districts where forests can render service to agriculture, for a matter of a few months only, a more understanding attitude of mind among forest officers might be engendered?—I agree.

9849. Is that ever done here?—It has never been done.

9850. Would you look with favour on such a suggestion?—Yes, I would.

9851. Are the forests being exploited as reserves of fodder against famine? —Yes, in times of famine forest areas ordinarily closed are opened.

9852. But it is too late to wait for famine, is it not; you have to make your hay or silage beforehand?—Yes. That is not done: these areas are merely thrown open for the cattle to graze in; there is no system of making hay.

9853. There is no system of establishing a famine fodder reserve?—No.

9854. Do you think it might be a good thing?—It would be a good thing if it could be done.

9855. Have you ever suggested it?—No; I have not.

9856. When was the last serious fodder famine in this Presidency?—In the year 1925.

9857. Can you give the Commission any estimate of the number of cattle that died in that famine?—No; I cannot.

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9858. Was it an important number?—It was an important number.

9859. Do you think, having regard to the large areas of forest (some of it at considerable altitudes) in this Presidency, a well organised system of famine fodder reserves might have saved large numbers of cattle?—Yes.

9860. To the great profit of the ryot?—I agree it could be done.

9861. It would be a good thing?—Yes.

9862. Have you been able to use the prickly pear as a means of staving off the worst effects of fodder famine in this Presidency?—Yes; we have done a lot of work on that; we have published a bulletin on the subject. We have used prickly pear; it is undoubtedly a useful thing in bad famine times.

9863. Was it a success?—Yes; I would call it a success; it is not very popular, but it is a success; it keeps the animal alive.

9864. On page 53 in answer to question 20. Paragraph (*a*), you say "Existing market facilities as very far from being satisfactory. The history of the Tiruppur cotton market will serve to show the difficulties which exist." Then you go on to give an account of the efforts to establish a market in the Coimbatore district. What selling arrangements in fact existed before the attempt was made? In other words, what selling arrangements exist now? Is there a well-established market?—No; exactly the same selling arrangements which I have described under the heading of "Cotton" on page 55, paragraph 5.

9865. The Commission has read through this very detailed and interesting account of this attempt to establish a market. Do you say this attempt broke down owing to the deliberate design of those who were interested in preventing a market being established?—Yes.

9866. Do you suggest that provincial legislation should be passed which would make possible the formation of a market according to the plan originally suggested?—Yes.

9867. Have you made representations to that effect to Government?—Yes.

9868. On page 54 you say, "The market is to be for grains and other agricultural produce as well as for cotton under the new scheme." What was the object of the merchants or commission agents in introducing other crops into this market, if that was their doing?—Simply to make it a general market instead of a cotton market only, as we wanted.

9869. Do you deplore that?—I do not object to that so much, but I think it would be very much better to have a separate cotton market.

9870. On page 54, on our question as to "Existing market facilities and systems of marketing and distribution for different kinds of agricultural produce," I should like to ask you a general question: Is it your view that sufficient facts have been accumulated and sufficient work carried out on those facts to justify firm views as to the marketing practices in this Presidency?—No, I would not go as far as that; I think we do know pretty well what goes on, but I would like to have it examined by a special officer before anything really definite was done.

9871. Do you think that would be a field in which an agricultural economist might very safely be employed?—Yes, certainly. May I say in connection with that that we are doing some work of that sort at the moment for the Central Cotton Committee; we have chosen and they have approved one or two small areas in the cotton-growing districts in the Presidency, and our men are trying to get at the exact economic conditions at those places as test places. We are getting on very well with that.

9872. Is it the fact that some of those results have been published, and some have not?—We have sent them up to the Cotton Committee, but I do not know whether they have actually published them.

9873. Do you think the producer fares worse in his marketing of food crops than he does in his marketing of export crops?—Yes, I think on the whole he does.

Mr. Rudolph D. Anstead.

9874. Is it the case that the presence of buyers, representative of the large export firms, affords some measure of protection in the case of money crops?—It does, undoubtedly.

9875. They rule the market?—Yes. They rule the market and you get fairer competition.

9876. In your experience in this Presidency, does the moneylender control the money crop of the borrower as completely as he controls the food crop of the borrower?—Yes, I think he does.

9877. He controls both?—Yes.

9878. And if the debt is sufficiently substantial, the whole of the crop, whether a food or a money crop, will pass through the moneylender's hands?—Yes, as long as the debt is sufficiently large.

9879. So that it is really in the fact that the true market price for his foodgrains is less easy to discover that the explanation lies?—Yes; that is so.

9880. You mention certain charges that the cultivators pay. What other dues or charges are there which the ryot pays by the time he arrives at the point of selling? Are there any dues at the outskirts of the town?—There is probably a municipal toll.

9881. He pays that?—Yes; there are no market dues, of course.

9882. Does he pay that on the wheel or on the value?—On the wheel.

9883. Then he gets to the market? What is the first charge he pays there?—The first charge is for having his stuff weighed.

9884. Then does he pay for standing accommodation for his cart during the day?—There are certain places where he has to pay for it, but not everywhere; certain municipalities make rules about that.

9885. You have taken him to the point where he has paid for having his cotton weighed. What is the next charge?—The next charge is for the commission agent.

9886. Is there a charity cess?—There is, very often; nearly always if there is a temple.

9887. Is that resented by the ryots?—I do not think it is resented; I do not think they resent the temple cess at all.

9888. *Mr. Kamat:* Is not that a very small amount?—It is; I think he looks on that as a religious duty.

9889. *The Chairman:* Are there any other charges to face?—No, I think that is the end of it.

9890. But it is usual, I suppose, for disputes to arise after the rate has been fixed and the cart unloaded?—Yes, and he gets the worst of them.

9891. Because he cannot very well reload his cotton, and go off with it, and so he is bound to acquiesce?—Yes.

9892. Do you think a properly controlled market would go a long way to secure a fairer return to the grower?—I do; it would remove a lot of these charges, and he would get fair weights and fair prices, and would not have to pay these extra charges. I envisage a cotton market committee to which he could appeal in cases of dispute.

9893. Do you think the time has come when public opinion is ripe for the licensing of commission agents or middlemen?—No, I do not think so.

9894. You do not think any suggestion of that sort would be useful?—I do not think we are ready for that.

9895. Is it your view that variations in weights and measures are a disadvantage to the cultivator?—I think they are a great disadvantage.

9896. Do you think that public opinion is ripe for the standardisation of weights and measures in the Presidency?—Yes, I think so; I do not know that it would be popular, but I think the time has come when we could get it done.

9897. On page 56, you are talking about the marketing of ground-nuts; you say this crop is largely exported. In what state does it leave the cultivator's hands? Simply dried?—Simply dried in the shell.

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9898. Where is decortication carried out?—Mostly in France; it goes home in the shell to a great extent. Some of it is decorticated out here in factories.

9899. Do you know anything about the process of decortication?—It is simple; the shell is very brittle; it goes through rough rollers with just sufficient pressure to crack the shell but not the kernel inside.

9900. Is that known as the dry method?—Yes.

9901. Is any ground-nut decorticated by the wet method?—Not to my knowledge.

9902. Do you know that there is a complaint from buyers overseas with regard to that?—Yes. The ryot very often does it for getting better weight, but not for decortication purposes; he wets his ground-nuts thoroughly for the purpose of adulteration.

9903. *Dewan Bahadur Raghavayya:* To a large extent he used to do it?—I do not think he used to do it for decortication purposes. He wets his groundnut only for the purpose of getting a better weight.

9904. Perhaps you will find out whether it is done. The cultivators may not be aware of the effects of wet decortication?—Yes.

9905. *The Chairman:* On page 56, paragraph 9, you say that, in the case of sugarcane, commission agents working on behalf of merchants go about the districts, during the season and successfully form a ring, you go on to say. "The producer deals through the village moneylender to whom he pays commission for the privilege of sale, godown rent, a contribution to the village deity and interest on small sums of money advanced through the season." I do not quite see how the commission agents form a ring?—They form a ring to control the price; they will not buy beyond that price.

9906. Their concern, as commission agents, is to get their commission?—That is true, but it is not exactly like that. Their commission is not always paid on the amount of money that they handle, but on the quantity that they buy; that is to say, if they are giving a bigger price, they do not get a bigger commission.

9907. But do you suggest they get a smaller commission?—They get a smaller commission or a fixed commission.

9908. If the percentage going to the agent does not correspond with the total paid then it ceases to be a commission in the ordinary sense, does it not?—In the ordinary sense, yes.

9909. Is it definitely the case in this Presidency that these commission agents are not paid on a percentage basis?—They are not paid on a percentage basis.

9910. On what basis are they paid?—On the basis of so much for every ton they buy. They are paid on volume, not on value.

9911. What interest in the world has the commission agent got to form a ring when he is paid a fixed rate on weight?—Because, very often, he is not only the commission agent but he is doing business on his own.

9912. *Mr. Kamat:* Have you any co-operative sale societies for the sale of jaggery?—I do not think there is a single one yet.

9913. *The Chairman:* Do you suggest that the cultivator is entitled to protection against any one who poses as a commission agent but is, in fact, a merchant?—I think he should have protection.

9914. What would you suggest should be done?—I am afraid I have no practical suggestions to make, but I should like to see that protection given to the cultivator.

9915. What objection do you see to the licensing of commission agents in regard to a crop like sugarcane?—No objection, except that it would be an unpopular measure.

9916. With the commission agents?—Yes.

9917. Do you think that would create alarm and disquiet among the ryots?—No; the ryots would like it.

Mr. Rudolph D. Anstead.

9918. Will you tell the Commission whether it is the custom of the ryot in this country to hold his home-grown food-grains for consumption throughout the 12 months?—As a rule, yes.

9919. So that, if he markets his food-grains, on the assumption of the practice you describe being general, he is only marketing the surplus?—Yes; unless he is very much indebted.

9920. In which case, he has to sell everything and borrow money to buy food?—If he is very much in debt, he has to do that.

9921. Are the physical arrangements for storage in the home adequate?—Can a ryot keep grain in good condition for 12 months?—Yes. Different methods are adopted in different places; each district in the Presidency has a different method of storing. Some is stored in the ground in pits, some is stored in big pots, and some is tied up into stacks wrapped round with rice straw, which is a very good way.

9922. These methods are very practical?—Very practical indeed.

9923. In paragraph 16 on page 57, you say, "The margin upon which such intermediaries operate, a commission agent will make from 1¼ to 3 per cent. on transactions, and the merchant will get from 5 to 6 per cent." Do you think we may take it that those statements are founded on sufficient data?—Yes, I am sure of that.

9924. May I take it that, on this question of marketing, your view is that you have come now to the point where all such facts as are already at your disposal should be brought together, deductions drawn, and action taken, if necessary and that you should also proceed to get further data representative of marketing conditions throughout the Presidency?—That is the position exactly.

9925. Are you waiting until you can get an agricultural economist before you can do that?—Not necessarily; but I think the two things should go together.

9926. Is anything being done at the moment?—Nothing; the Marketing Act in this Presidency has been dropped.

9927. In answer to question 20, on page 57, paragraph 2 (*b*), you are talking about propaganda in the matter of adulteration of crops and the consequent reduction in their aggregate market value. Have you got taluk development organisations in this Presidency?—No.

9928. Nothing of the sort?—Nothing.

9929. Apart from the co-operative organisation, what is the smallest organisation?—There is nothing except the co-operative organisation.

9930. Nothing at all?—No.

9931. There is no district association?—No.

9932. And no taluk association?—No.

9933. Do you think that Taluk Development Associations are sound?—No, I do not think they are sound; they depend too much on just one or two particularly keen people, and directly they give it up, the whole thing dies. I would much rather have a good co-operative sale society.

9934. But you took such a gloomy view of the co-operative movement earlier?—I do; but that does not mean that it should not be pressed on. I want it to be developed; I think that is the way out.

9935. *Professor Gangulee:* Have you any agricultural associations?—There are none.

9936. You had one?—We had one or two and there are one or two which may still be said to exist, but they are as near dead as may be. They die for the reason that they are started by one or two enthusiastic men, and directly they leave the place the whole thing dies.

9937. *The Chairman:* I notice that our questions on Co-operation have been left unanswered. I think you made it plain to the Commission that you have not concerned yourself with the details of the working of the co-operative organisation?—Yes.

9938. There is nothing that has not been touched upon so far that you wish to say about co-operation?—No; only that very often it seems to me that what happens to the co-operative societies and agricultural associations is that they are all run by the enthusiasm of two or three people, and they entirely depend upon them; when these enthusiasts go, the whole thing falls flat.

9939. But I do not think any movement in human society is dependent upon the mass mind as such. Do you not think there are always leaders?—There are always leaders but in these organisations it seems to me you get nothing to lead; nobody is anxious to do anything.

9940. Is not that largely a question of education by the few who are able to get a move on?—I think myself that most of these difficulties we have been discussing really boil down to the question of education.

9941. Question 23 deals with General Education, apart from agricultural education. You have touched on general education in answer to our question on agricultural education, but there are one or two questions dealing purely with general education which I should like to ask. Would you agree that one of the principal causes of the relapse into illiteracy which takes place among boys who have their education stopped at the age of 10 or 11, is the fact that they return to entirely illiterate homes in villages in which there is no reading material?—I agree.

9942. Do you think it follows from that that any forward move in education, designed substantially to raise the percentage of literacy, ought to be accompanied by a determined attempt to push adult education?—Yes, on the whole I agree; but I should rather like to see it go straight on, so to speak; I should like to see something designed to catch the boys when they leave school and go back to their villages rather than an attempt to educate people who are 30 or 40 years old; I would rather catch them when they are 17 or 18, and continue their education.

9943. Do you not think that when you are trying to move a mass which is so entirely inert as the rural population of India undoubtedly is in the matter of education, you must push wherever you get a grip on it?—Yes.

9944. Do you not think that a plan designed to increase literacy amongst school children, that is to say, to keep children long enough in school to make them literate and to maintain their literacy when they leave school, and at the same time to push adult education, offers the best hope of achieving success?—I agree, but I have not much hope for adult education.

9945. Why not?—I do not think it would be popular enough to entice the adults to come.

9946. What experiments have been tried, within your knowledge, in this Presidency in that connection?—I do not think any experiments on adult education have been tried.

9947. On what, then, do you form your view on adult education?—Simply on my knowledge of the people. I do not envisage the adult ryot taking the trouble to go to school.

9948. *Dr. Hyder:* Has any attempt at adult education been made by the Missionaries working in the rural areas?—I do not think so; they confine themselves mostly to children and the younger people; I do not think they have done very much with regard to the adults, and that for the same reason, that they do not find it popular; the adults will not go to school.

9949. *Mr. Kamat:* Are there any night schools in this Presidency?—The only night schools that I have any knowledge of are the few we run ourselves on our farms for the boys of the farm labourers.

9950. *The Chairman:* I find it difficult to understand your argument on page 58; you say, "Capitalist farmers might be a success in countries which are young and where land fit for cultivation is available in plenty. In India the tendency of farmers with surplus capital is rather to increase their holdings by purchase of more land than to devote it to more and more intensive cultivation." So that what is going on, in your view, is an attempt to

increase the size of the holdings in a country where it is extremely difficult; is that the point?—Yes. The point is that a man likes to have land and own it, even if he does not cultivate it; it gives him a certain status.

9951. I gather that you are quite definitely of opinion that the ryot in this Presidency is not unreasonably conservative?—I am definitely of that opinion.

9952. If you have got a thing that is really worth his while to adopt, you will not find difficulty in inducing him to take it up?—That is very much so; there is no man who will not be willing to take it up, once you convince him that it is a good thing.

9953. On page 59, you are talking about various types of landholders and their several influences on the countryside. You say, "The efficiency of the worker has been lowered by such discontent [directed against the landlord] and this together with the attenuation of the purse of his master, is leading to the deterioration of wet cultivation." I wanted to be certain that I understood why the attenuation of the master's purse limits or destroys wet cultivation?—Because the master wants to reduce the cost of that wet cultivation.

9954. I thought it was the landlord you were talking about, or is it the owner employing labour?—It is the owner employing labour.

9955. I see; so that your view is that this constant sub-division, by its effect in reducing the means at the disposal of the landowner, and its further consequence, in limiting improvements and even in removing the capacity to prevent deterioration is reducing the fertility of the soil and laying a further burden upon the agricultural labourer?—That is my view.

9956. Does not the agricultural labourer in that case work for a wage?—Not always; he may work for his food; he is often paid not in money but in kind.

9957. But I still do not quite see why the attenuation of the purse of his master should worry the labourer?—He will not be treated as well and he will not get as big a share of the profits if he is working on the profit-sharing system.

9958. I had not realised that he works on a profit-sharing system?—He may do.

9959. Do you wish to say anything about sanitation and general hygiene in their relation to the welfare of the rural population?—No, I do not think so.

9960. How about water-supply?—Do you think the villages in this Presidency have a good water-supply?—On the whole, yes.

9961. You have no improvements to suggest there?—No definite improvements to suggest.

9962. Is dysentery rife in the Presidency?—No, the main things we are worried with are malaria and hook-worm, particularly hook-worm.

9963. How about guinea-worm?—I do not think that is a disease we know anything about. Hook-worm is the great thing. It has been said that 98 per cent. of the people of the Presidency have hook-worm; I do not know how true that may be.

9964. And that particular parasite enters into the body through the feet?—Yes.

9965. Is it definitely your view that the incidence of water-borne diseases in the Presidency does not indicate an unsatisfactory water-supply?—Yes; I think I am prepared to say that.

9966. How about the question of housing, the actual construction of the houses? Has any attempt been made to improve the house as a dwelling place and a nursery?—By the people themselves, do you mean?

9967. By showing the people how they can do it themselves?—I do not know that there has.

9968. What do you say about housing in rural villages in the Presidency?—One thing that is very noticeable is that directly people get a little more

prosperous and get a little more money, they will put tile roofs on their houses; that is the first thing you always see.

9969. Just to keep the rain out?—Yes. But people are generally very conservative in this country about the type of house they live in.

9970. Where do these tiles come from?—Mangalore, all along the coast.

9971. Are they carried a long way?—Yes, a very long distance.

9972. They are very heavy, are they not?—Very heavy, but there is a very big trade in them.

9973. What sort of cost is involved in roofing an ordinary village house?—I can get you that information.

9974. I was only wondering whether some of the many substances which at any rate in my own country are so very much cheaper and almost as effective, such as tarred felts, which may very well be made out of local fibres, would not afford a water-tight roof at about one-third the price?—I do not think it would be cheaper than tiles.

9975. I cannot say, as you have not been able to tell me how cheap the tiles are?—My Agricultural Engineer can get you the prices. I will see that they are supplied.

9976. I was wondering whether some general investigation on that line would be worth while. Do you think it would?—Yes.

9977. *Mr. Kamat:* Is there not a tile factory here in Coimbatore?—Actually in Coimbatore?

9978. Yes?—I did not know there was. There are some very close to us, of course; they are along the whole West Coast here.

Dewan Bahadur Raghavayya: There is one in Coimbatore.

9979. *The Chairman:* Your suggestion was that tiling was a luxury or the first sign of increasing prosperity. I wonder whether it is unnecessarily expensive?—I do not think so; tiling is very cheap. Tar is an expensive thing in this country. We do not make it; there is no coal.

9980. *Dewan Bahadur Raghavayya:* Is it not the fear of incendiarism that makes people resort to tiles in spite of their costliness; there are other roofings which are much cheaper; *e.g.*, the palmyra and the thatch which are water-tight?—Yes, but that sort of roofing needs constant renewal, whereas tiling is done once and for all.

9981. *The Chairman:* Was the answer to question 26 on page 60 prepared by you or Mr. Visvanatha Rao?—It is my own.

9982. What is the average period of revision for the settled areas in this Presidency? Is it 30 years?—It is 30 years, I think.

9983. Can you tell us what proportion, if any, of the Presidency is permanently settled?—No, I cannot tell you.

Dewan Bahadur Raghavayya: One-third is permanently settled or zamindari, and two-thirds is ryotwari.

9984. *The Chairman:* On page 61, when you ask for a revival of the practice of issuing returns of inter-provincial rail-borne trade, do you think that the form in which that information was given up to 1922 was satisfactory?—No; the Board of Agriculture in 1924 recommended improvements and I want the returns in the improved form recommended by the Board.

9985. Do you happen to know whether it is suggested now that when this practice is restored these improvements should in fact be accepted?—I do not know.

9986. On page 61, recommending a Provincial Statistical Department, you go on to say: "A Provincial Department would have a wide field of usefulness with regard to accuracy and it could address itself to the task of working out in detail and giving effect to lines of improvement suggested by bodies like the Prices Enquiry Committee, the Weights and Measures Committee, the Indian Cotton Committee, the Sugar Commission, and the Industrial Commision. At present recommendations made by such committees are apt to be

ignored for lack of funds and staff." Are you not suggesting a very wide function for a Statistical Department?—Yes, I agree. It seems to me to be the right department to do that sort of work.

9987. To stimulate other departments of Government to give effect to recommendations of Commissions and Committees?—Not exactly that, but to carry out the recommendations that are made; weights and measures, for instance, would be dealt by it.

9988. I see; recommendations of those bodies coming within the category of statistics?—Yes; as, for example, if we were to decide to standardise weights and measures in this Presidency, I think that my statistical department would be the very people to be called upon to describe what the different weights and measures existing were, and where they were found and so on.

9989. Have you any views to express as to the wisdom of introducing compulsory education?—I do not think the time is ripe for compulsory education in this country; it would be extremely unpopular and I do not like compulsion at all. All my experience as Director of Agriculture points to the conclusion that complusion is not the right way. I am entirely against compulsion.

9990. Have you any views about the education of females?—Yes; I think much more should be done; I think a lot could be done to help agriculture if we educated females.

9991. There again, do you think if you could bring about even a sprinkling of literacy amongst rural womenfolk you would at once make a substantial contribution towards maintaining literacy once attained?—Yes.

9992. *Sir James MacKenna:* Are there many districts in the Presidency in which the Agricultural Department is not yet functioning?—Yes, quite a number of places.

9993. Have you got a skeleton scheme for taking up these areas later?—Yes.

9994. Sanctioned by Government?—Not sanctioned by Government, no. What I do is; I ask for more demonstrators each year; as I get them I decide where they should go. I have a scheme of my own; it is left to me to decide where I shall put them.

9995. You have no difficulty in getting your recommendations accepted in so far as the staff is available to develop the work?—As the staff becomes available I can fill up the places; the difficulty is to get the staff.

9996. Would it not be better to have a scheme sanctioned by Government in advance, so that as the men became available the scheme could be developed, rather than to proceed by annual sanctions for extension?—Yes, as long as it is not made too hard and fast.

9997. You have been a member of the Board of Agriculture for many years. Have you any opinions as to its composition and usefulness or as to any way in which it can be improved?—I feel very strongly that the Board of Agriculture has been a most useful body in many ways and my idea of the central organisation we were talking about is really an expansion of the Board of Agriculture. I think that it is the nucleus for the Central Committee now.

9998. What about the sectional meetings that you used to hold?—They were extremely valuable, and I am very sorry they were stopped; I should like to see them held regularly.

9999. Do you know why they were stopped?—Purely on grounds of economy, as far as we are concerned.

10000. Then you refer to a cess in order to finance the Central Agricultural Association?—Yes.

10001. Have you considered how that would work out in collection? What crops would pay?—No; I presume it will be oil-seed.

10002. Well, I can tell you it would be rice, and I can tell you also that the incidence would practically altogether fall on one Province; that would be a rather serious obstacle, would it not?—I agree.

Mr. Rudolph D. Anstead.

10003. You have been here practically since the sugarcane breeding station was opened?—Yes.

10004. What is your view of its utility first to the Presidency as a whole, and secondly generally?—I suppose the sugarcane station here has probably done more good in India than has ever been done by any other single piece of work. That was largely due in my opinion to its being so wisely laid out by Dr. Barber; it is a memorial to Dr. Barber's work in this country; it is an excellent example of work extremely well done; and it is an example of what can be done, as I said earlier, when you get the very best man that can be had. I think most people would agree with me that Dr. Barber was one of the best men we have ever had in India.

10005. And that is being reflected in the manner in which the work is being carried on by his successor now?—Yes.

10006. Has the station been of much use to the Madras Presidency?—No; it has not been of much use to us, because they are not breeding thick canes.

10007. I understand you propose to open another station of that kind for your own purpose?—Yes. I have got the land; the Coimbatore station will merely be for the actual crossing; we shall take the seed and go straight on with the testing ourselves.

10008. You will take the seed from the existing station?—Yes.

10009. And you will develop a thick cane for yourselves?—Yes.

10010. There is no fear of a conflict of interests; in fact, one station will be supplementary to the other?—I anticipate that, yes.

10011. *Professor Gangulee:* With regard to the last point you have raised, as to compulsory education, what has been the experience of other countries in this matter of compulsory primary education? Do you know?—I am afraid I do not; I do not in any way pretend to be an educational expert.

10012. You do not think that public opinion in this country will veer round to legislation for compulsory primary education?—No, on the whole I do not.

10013. In countries like India, legislation generally precedes public opinion. We may not have valid public opinion at present in favour of compulsory primary education, but in such circumstances, as for instance in Japan, legislation helps to create public opinion; are you aware of that?—Yes, possibly.

10014. In a country like India where public opinion in this matter has not yet crystallised, legislation should precede public opinion?—I do not altogether agree.

10015. You carried out soil surveys in five different districts, did you not?—Yes.

10016. That survey includes both dry and irrigated tracts?—Yes, everything.

10017. Spread all over the Presidency?—Spread all over the Presidency, yes.

10018. And you found that phosphate depletion was the general characteristic?—Yes.

10019. Do you also take into consideration the nitrogen question?—Yes.

10020. What is the tendency as to nitrogen?—The greatest deficiency on the whole is phosphate; the next deficiency is nitrogen; but the phosphate is the greatest deficiency and all our work seems to show that you must combine these two. If you put in nitrogen, but leave out the phosphate, nothing happens; directly you put in phosphate you achieve results. I can give you a lot of instances of that. When you pay the visit that you are going to make to the chemical laboratory I will show you very striking charts illustrating that fact.

10021. I suppose it upsets the balance of plant nutrition?—Yes.

10022. Therefore you would attach as much importance to phosphatic as you would to nitrogenous manures?—I attach even more importance to the phosphatic manure; I cannot use my nitrogen without my phosphate, and therefore it is most important. It is our limiting factor in this Presidency; it upsets the balance.

Mr. Rudolph D. Anstead.

10023. So you are in favour of checking the export of bones; would you prohibit export entirely or would you put some heavy duty on export?—Personally I would prohibit it entirely.

10024. Do you think the country will be prepared to consume the quantity of bones that are now available?—I would not care if it did not.

10025. Would you hope that eventually this country would consume the whole quantity?—Eventually it would; and even if it never did, I would not mind very much.

10026. I understand you are preparing synthetic farmyard manure?—Yes, we are doing a lot of work on that.

10027. You think there is a great deal of scope in that direction?—I do.

10028. Is that already in the form of a commercial product? Have you been able to introduce synthetic manure into the farms?—No, we have not gone as far as that; the stage we have got to is to find out how to do it; we are now trying to devise a practical method that any ryot can use on his land. We are discovering that it is very largely a local problem depending on what waste material we have got; it has got to that stage.

10029. With reference to your educational problems, you of course have here your Agricultural College; you had, I think, 68 applicants last year out of which you selected 25?—No.

10030. That is what I gather from your evidence.—Last year, but not this year. The last time we selected, in July, we had over 200 applicants, and we selected 40.

10031. How much accommodation is there in this College for students?—We can take 40 a year with these new buildings; we used only to be able to take 20 a year; that is, three lots in three years, which makes 60. Now we can double that with this building; we can take 40 a year, that is to say about 120 in three years easily.

10032. The fact that you had 200 applications shows there is considerable demand for agricultural education?—No, I do not agree with you; they came because a series of very lean years, when there was no money and the Agricultural Department was not extending, had come to an end; during the last three years we have had rather generous grants from the Government; there were more appointments to be had; in addition to that the Co-operative Department were throwing open for the first time a certain number of appointments to men trained in this college. The result was there were more Government appointments and more people came to the college to get those appointments. In my view it has no bearing on agricultural education at all.

10033. They came with the hope of getting positions?—Yes, for no other reason. When these students come to be chosen we always ask each one, "What are you going to do when you get your degree and leave this college?" All the honest ones say, "I want a position in the Agricultural Department." The dishonest ones say, "I am going back to my land." When they have finished their course and taken their degree, I ask each one, "What are you going to do?" The answer is, "I want a job in the Agricultural Department." If I look up the records and say, "But look at what you said when you came in: you said you were going back to your land"; they will say, "Yes; I said that because I thought you would not take me unless I said that."

10034. Supposing the Revenue Department recruited men for the posts of Tahsildars and Revenue Inspectors from the Agricultural College, that would afford an additional attraction?—Yes, more would come; the more Government appointments there are to be had the more students we shall get.

10035. It is a good thing from the point of view of the Revenue Department that their Tahsildars and Revenue Inspectors should have some knowledge of Agriculture?—I quite agree; I would like every member of every department to have a knowledge of agriculture.

10036. The degree that you give is recognised by the University of Madras?—Yes, we are actually affiliated to the University of Madras; we are part of it.

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10037. You give the degree of B.Sc. in Agriculture?—Yes; Bachelor of Science in Agriculture.

10038. Not Master of Science in Agriculture?—No.

10039. With reference to your curriculum, do you give the students a course in farm economics?—It is not in the regular course, but it is a subject that is dealt with; they are taught a little economics and a little co-operation too, but it is not a regular course.

10040. There is no Professor of Economics?—No.

10041. You have two middle schools, one at Taliparamba, and another at Anakapalle?—Yes.

10042. You say one was more successful than the other?—Yes.

10043. Could you tell us why?—Yes, I can; the one at Taliparamba was put down in a place where there was a real, though small, demand for the school; the other one was put down at a place where there was only an immediate demand, and it was a mistake. They were experiments; it is one of those negative results. I may appear to be criticising one of my predecessors; I do not wish to do so, because I have no doubt that if I had been in his position I should have made the same mistake; but we did as a department make a mistake in putting that school in a place where there was not sufficient demand, though we thought at the time there was sufficient demand. That is my explanation.

10044. That is the school at Anakapalle?—Yes.

10045. That institution has not been able to create any demand by its existence?—No; it has not. That is why I say it has failed.

10046. What is the future with regard to the Taliparamba school; will it be popular?—I think it has a chance of gaining in popularity, yes.

10047. Is the number of students increasing?—It is not increasing, but it is holding its own.

10048. What is the qualification for teachers employed in these schools?—In my middle schools most of the men are men trained here at this College.

10049. So men trained by you are the teachers?—Yes; these two schools are entirely under me, not under the Education Department, being experimental.

10050. Directly under you?—Yes.

10051. What is the salary of teachers?—It is not a fixed salary. Taking fairly senior men, it is about Rs. 200. I chose the teachers; one is a farm manager; I thought he would be a good teacher and he is.

10052. You have told us a great deal about nature study and you realise its importance. Have you had some sort of co-operation with the Director of Public Instruction in this matter of introducing nature study in ordinary schools?—He knows my views, and they have been plainly stated on one or two committees, but I am afraid we do not altogether agree.

10053. You have no control over normal schools where they train teachers. Have you an advisory board there?—No.

10054. You have nothing to do with it?—I have nothing to do with it.

10055. On page 37 you say that big landholders do not co-operate in the cause of agriculture. Can you explain this abnormal phenomenon?—No; I cannot explain it.

10056. Here you have a well-equipped college and an excellent farm; you are doing your best; you have 13 lakhs to spend every year out of revenue; and yet those landholders do not take an interest. Can you explain that?—I cannot.

10057. Have you had any conference with the big landholders of the Province? Have you invited them here?—We have invited them here, but we do not get very many of them to come.

10058. You had not much response?—No.

10059. I find that you have 31 stations; are you quite satisfied with the existing methods of propaganda and demonstration?—I am satisfied; I think very strongly that we are on the right lines, if I may say so.

10060. Do you find any change in the agricultural outlook among the cultivators in the areas where successful demonstrations are held?—Yes.

10061. Then, I draw this conclusion, that in those areas where successful demonstrations are held you find that the cultivators take more interest in the education of their children?—No; I cannot say that I do. I would expect that, but I cannot say that I see any marked improvement in that direction.

10062. You feel the necessity of having some effective non-official agency to assist the Department in demonstration and propaganda, do you not?—Yes, a non-official agency such as the co-operative societies, certainly; I want co-operative societies to take up the demonstrations; some of them are doing so. I think a lot could be done un-officially in that way. I do not quite understand what you mean by non-official.

10063. The point has already been raised with regard to such institutions as the Taluka Development Associations in the Bombay Presidency which are run by non-official agencies. Do you not feel the necessity for such non-official agencies here?—Our experience of that sort of thing has been so hopeless in this Presidency that I do not. As I said earlier, all our agricultural associations and things of that sort have failed, and I do not think there is much hope for them.

10064. You state that the agricultural associations failed. What support, assistance and guidance have these associations received from the Department?—Every possible support we could give them; we attended their meetings and did everything we could in reason.

10065. As regards the cropping system, do you find any difference in the system employed in small holdings and the system employed in the large holdings?—No.

10066. In the method of cultivation?—No.

10067. Take, for instance, the rotation of crops; do you find one system in small holdings and another in large holdings?—No.

10068. Could you give us an idea of the size of an average holding in this Presidency?—I should say about 6 acres: but an average does not mean much in a big Presidency like this.

10069. As regards the question of the cost of manures, is not the item of railway freight really the cause of the increase in cost?—It is one item, undoubtedly.

10070. I understood you to say you did not think railway freights should be reduced in any way; you think the railway freights are quite reasonable?—I do from the railway point of view; after all, the railways must pay their way.

10071. But we are considering it from the agriculturists' point of view?—As an agriculturist I should like to have my stuff carried for nothing, but I do not think it is a reasonable request.

10072. If the railway freight on manures could be reduced do you think that would help towards the introduction of manure?—Yes, of course it would.

10073. On page 46, paragraph 6, you say that opposition has been fostered by politicians with reference to the Pest Act. Are you referring to politicians in the Council or outside the Council?—Within the Council.

10074. Such Pest Acts have been adopted in other agricultural countries?—Yes.

10075. Further on you suggest that the enforcement of the Pest Act would increase the area under food and fodder crops. Why then should there be

this opposition from educated people?—Mr. Chairman, If I am asked questions bearing on the policy of the Legislative Council, I should like to answer them *in camera*.

10076. Very well, then; we will leave that. With regard to the dairy industry, you say that milk recording should be done by all large Government institutions? Have you introduced a system of milk recording here?—Yes, we have a system, and the Buckingham Carnatic Mills have been doing so on our advice but unfortunately they have stopped it.

10077. Have you not tried to introduce that among the cultivators?—No; you cannot expect them to do it. My object is to try and get a real figure for what the different breeds of Indian cattle will actually give.

10078. Is it in your experience that pasture lands are being gradually put under cultivation?—It is, undoubtedly, in certain districts.

10079. There is that tendency?—Yes.

10080. So that you anticipate that the time is fast approaching when cattle-breeding and dairying will have to depend largely on stall feeding?—Yes.

10081. Hence the importance of investigation with regard to silage and such matters?—Yes.

10082. You have not been able to give much attention to the investigation of fodder supply?—Not from the animal nutrition point of view, no; we have never had the staff.

10083. Nor from any point of view?—Only from the point of view of trying to grow it. We grow fodders on all our farms, and demonstrate what fodders ought to be grown. We have introduced a number of fodder plants; guinea grass and elephant grass have been introduced very widely by us, but there we stop; we have done no research on the subject. We have never had an agrostologist, though we have asked for one.

10084. Do you think there is scope for introducing new fodder crops?—I do not think we can introduce any new ones.

10085. As regards the Forest Panchayats, what are their functions?—It is entirely a new thing; the idea is to put in the hands of these Panchayats large areas of forest that are kept for grazing or may be thrown open to grazing and for fuel reserves, to be controlled by village Panchayats instead of by forest officers, so as to teach the people to handle these questions themselves. The usual cry is that the forest officers close areas autocratically though it would not matter if they were thrown open. It is difficult to make the villager understand the real reason. The idea of handing them over to the village Panchayats is to make them understand the real reason for forest conservancy and at the same time to try to teach them to plant trees and to look after these things generally.

10086. On page 59 you refer to changes in the method of spending of the cultivator; you refer to his expenditure on marriages, ceremonies, charities, etc., and then you say, "These changes will make him a *plus* instead of the *minus* economic unit he now so often is." Do you suggest that he is at present a *minus* economic unit?—Very often he is. That is why I say "he now so often is."

10087. *Mr. Calvert:* In the last Annual Report you say that cross-breeding with half-breeds will be continued. I think from the samples we were shown that cross-breeding has proved a failure when continued?—We do not admit that.

10088. You think it is worth while going on?—It is worth while; after all, we have had very good results though we have had failures; we are not convinced that it is a failure; we want more knowledge on the question.

10089. Is this cross-breeding an agricultural problem, or is it merely an urban milk supply question?—It is very largely a question of urban milk supply.

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10090. It is not an agricultural problem?—I would call it an agricultural problem.

10091. But it does not affect the uplift and welfare of the village communities?—It does not exactly touch that problem.

10092. In discussing the question of paddy, you think the ultimate object of the whole work is to improve the varieties of paddy, the test of improvement being increased monetary return to the cultivators. Do you mean by that the net return?—Yes.

10093. Are accurate balance sheets being kept to distinguish between net and gross returns?—Yes.

10094. Are they available?—Yes.

10095. I have not quite understood how you keep your strain of seed pure. You say that little of the seed now sown is actually distributed by the department; then how do you keep your strain pure?—We need not do anything to keep the strain pure, if it is a pure strain to begin with; there is practically no cross-fertilization in paddy; it cannot cross with anything else as long as it is pure strain in the Mendelian sense.

10096. There is no harm in its being mixed up with other paddy?—No; it is a very lucky thing that paddy will not cross-fertilise easily. There is about 2 per cent. cross-fertilisation in this crop. That does not apply to millets; we have great difficulty in the case of millets because they cross-fertilise freely.

10097. If your paddy growers sell to the moneylender the whole of their paddy and then buy back for seed later, they will not get a pure supply?—No, therefore we must keep a separate control over seed supply, which we do.

10098. I gather that your department has handed over to the Industrial Department all work connected with wells, water-lifts, well-boring, and such things?—Yes.

10099. Are you satisfied with that?—Yes, I think it is an industrial matter.

10100. You think the Industrial Department can be trusted to give adequate attention to these things?—Yes.

10101. As regards education in this College, when a man goes to study research he takes up research as a profession; when he studies dentistry he practises as a dentist; when he studies for the bar, he practises as a barrister. What is there in the Agricultural College which makes it an exception?—I cannot tell you.

10102. Is it the course?—For one thing, I suppose it is a fairly cheap way of getting a degree. After all, we give them education free; we do not charge them any fees.

10103. Are there no fees at the College?—No fees in the College; it is free education, although they pay for their messing, books, etc.

10104. *Dr. Hyder:* You are speaking of the Coimbatore Agricultural College?—Yes.

10105. *Mr. Calvert:* Has it anything to do with the fact that the course is not suited to the petty holdings?—No, I do not think so.

10106. You seem to me to have got too theoretical an education which is of no practical use to anybody?—We used to have a practical course here but nobody would come to it. For many years we ran a two years' course of practical farming. When first the department was being formed we badly wanted men and we gave the men who passed that course appointments in the lower subordinate service. As the department got older and bigger we decided that that was wrong, that we wanted a much better type of man, and we stopped recruiting men from that class. Immediately the supply of students to that class ceased, and we had to close down the class simply because we could not get anyone to join it.

10107. Do the bigger landowners send their sons to the College?—No, not here.

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10108. Has any attempt been made to induce them to send their sons to the College?—No organised attempt has been made; one cannot suggest how to do it.

10109. Is there any course of instruction in this Presidency suitable for the sons of cultivators holding or owning up to 15 acres?—At the present moment all that we can do is to send them to one of our farms and teach them there. We take anybody there and teach him. There again there is a very small demand, but we do occasionally get a demand for it. There used to be such a course of instruction, but it failed and we gave it up.

10110. On this question of demonstration, given the option, which would you prefer, concentration in a village and trying to convert that village to adopt the improved method, or alternatively, dispersing your efforts over a number of villages?—I would prefer to concentrate on a village.

10111 Are there, in this Presidency, any better-farming co-operative societies, designed to induce the whole of the people to copy your improved methods?—No.

10112. If you had an organisation like that, attempting to organise the whole population of the village to follow your advice, would you give that organisation preference over the individual?—I am inclined to think I would. I look at it in this way, that by concentrating at one place you create, so to speak, centres of infection.

10113. If you can get half a dozen people they are far more likely to adopt your methods than one person?—Of course, if I got the whole village, I should be very satisfied.

10114. On page 44 you say, "There is little scope for the introduction of new crops in this Presidency." I gather it may be put in this way, that the method of cropping on large holdings is practically the same as the method of cropping on the small holdings, or that the owner of the small holding grows the same crop as that of the owner of the large holding?—Yes.

10115. Is there, under this present system, any hope whatever for the 2½-acre or 5-acre man?—Yes, I think there is some hope for him.

10116. Your prospective benefit works out at Rs. 3 per head, it is Rs. 9,40,00,000 for about 30,000,000 cultivators?—What are you quoting from?

10117. From the *Popular Account of the work of the Madras Agricultural Department*?—It is only a rough guide.

10118. If your prospective gain is only Rs. 3 per head, or Rs. 15 per family, is there any hope at all for the 2½-acre man?—I think there is some hope for him.

10119. Only 15 rupees of hope?—Yes.

10120. Would there not be more hope if you could increase intensive cultivation?—I agree.

10121. Could not that be done by introducing new crops that you can think of, or that you can introduce in this Presidency? What about potatoes?—We grow quite a lot.

10122. It is on a comparatively small area?—Yes, they will not grow on the plains.

10123. Has your propaganda reached the 5-acre man?—Yes.

10124. Has it reached the man below him?—Yes, we deal with the small man.

10125. What exactly is the possible improvement? Is it an improved distribution of the existing crops, or a bigger area under better paying crops? —No. I think that our hope is to improve cultivation on the existing area.

10126. I notice you rather deprecate the increase of money crops at the expense of food crops?—I do.

10127. And yet, most of your work has been done on the money crops?—No, most of our work has been done on the food crops; we have done more work on paddy than on any other crop.

10128. The proportion of your improvements is much higher on sugarcane and cotton; it is 40 per cent on cotton and 20 per cent on sugarcane. For paddy it is only 6 per cent?—That is true, but that is not altogether because we have concentrated on cotton. You must remember that American cotton caught on, so to speak, enormously in this Presidency. We introduced it at the time of the boom; it fetched enormous prices and everybody was anxious to grow it. We were successful in introducing Cambodia; it went like wild-fire; that accounts for the figure you are quoting; people took that up very readily.

10129. About 6 per cent of the paddy crop is under your improved varieties. Would you take the total percentage of the total gross area under your improvements as about 6 per cent?—Yes, I think so.

10130. It seems to me you are extremely pessimistic; you think there is no hope at all for the poor people?—I do feel rather like that on this question.

10131. *Sir Henry Lawrence:* Is that a correct impression?—That is a correct impression; I am pessimistic about it.

10132. *Mr. Calvert:* On this question of seed, you have the alternative of a private seedsman and a co-operative society. Are the people here willing to pay a premium for pure seed?—No, I do not think so; we do not charge them a premium.

10133. The only profit for the private seedsman would be out of the premium?—I do not think you can do it with the private seedsman.

10134. In your attempts to distribute the pure seed, do you sometimes suffer losses?—No, never.

10135. You have no conspicuous financial losses?—As a matter of fact, we have a small gain; we never lose; we can get rid of all the seed.

10136. What area can we take per plough? 12 acres?—Smaller than that.

10137. You mention here 6,000 improved ploughs are in use. I was trying to find out what area that number would cover. Would it be 12 acres per plough?—Yes. We do not sell the ploughs; the cultivators have to deal direct with the firms.

10138. One point about mass production, if you have got to have mass production, you must standardise your ploughs for all India to about six types. Is that possible?—I think it is possible. All India is rather a big area. If you say for the Madras Presidency I would certainly say yes. I do not know anything about the conditions outside this Presidency, I am sorry to say. I imagine it is possible. If you say Madras instead of All-India, I would unhesitatingly say yes.

10139. You would then for mass production have six types of ploughs, to meet all conditions?—Yes.

10140. Has your college here a co-operative society for students?—We have a small one, not for the students but for the officers.

10141. From these figures here, I gather that in Madras there is a landless tenant class?—Yes.

10142. Then there is the smaller owner who takes on land?—Yes.

10143. What cultivation unit does he aim at?—Is it about 10 to 12 acres?—It is less than that.

10144. What is the limit?—A yoke of oxen.

10145. You find him unwilling to take more land, involving two yokes?—Yes, on the whole.

Mr. Rudolph D. Anstead.

10146. Can you say, from your experience, whether tenancy is an obstacle in the way of agricultural improvement?—I certainly think it is, because if you are going to have tenancy for a limited number of years, with the probability of being turned out of the land at the end of that period, it is no good your trying to induce the man to put in manures and so on, to improve the land. You are confined to showing him simple methods like transplanting paddy. It is a limiting factor.

10147. Your best outlook for progress is the self-cultivating owner?—Undoubtedly.

10148. And your tenant cannot go in for intensive cultivation?—No.

10149. You mentioned to the Chairman something about goats. Has there been any special enquiry into the economics of the goat?—No.

The Commission then adjourned till 11 a.m. on Monday, the 15th November, 1926.

Mr. Rudolph D. Anstead.

Monday, November 15th, 1926.

COIMBATORE.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E., C.B.

Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.

Sir JAMES MACKENNA, Kt., C.I.E., I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU, C.S.I.
Rao Bahadur B. MUNISWAMI NAYUDU GARU.
} (*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH.
} (*Joint Secretaries.*)

Mr. RUDOLPH D. ANSTEAD.

Further Oral Evidence.

10150. *Mr. Kamat:* You say in paragraph 14 of your answer to question 1, "As regards men for research work, I do not think that really suitable men can be found as a general rule (of course there are exceptions) in this country and it is necessary, in the first place, to recruit European research officers to start the work and train their own Indian assistants who can ultimately take their places." As a matter of fact I believe that, in every country, research workers are rather rare; is not that the case?—Yes.

10151. Then we are told in another place that at the present day really first class research men, senior men, I mean, are rather difficult to get out to India and that we can only get second best men. Is that right?—Under the present conditions, that is true.

10152. You say that it is not possible, by sending men to Pusa, to get the very best post-graduate training. Is that right?—That is my opinion.

10153. And therefore it is absolutely necessary to send Indians to England after they have had some experience here?—That is my opinion.

10154. Have the Madras Government a regular scheme for sending such Indians, after they have acquired experience in your department, to England for their training?—Not regularly; we have just sent one for the first time on this new principle.

10155. Is the man who has been sent of the rank of Deputy Director of Agriculture, or is he a junior man?—He is a senior Research Assistant in the paddy section.

10156. He is the only man who has been sent up to now?—Yes.

10157. In order to maintain continuity of research, is it not necessary to have a scheme for sending men regularly from time to time?—I think so. I should like to see a regular scheme adopted.

10158. Have you prepared any such scheme for the consideration of the Government, or have they not taken this matter into consideration at all yet? —I have suggested this scheme to the Government.

10159. And it is under the consideration of the Madras Government?—I presume so. I have suggested it to them and they allowed me to send this particular man.

10160. You seem to take a rather gloomy view of the agricultural graduates trained at your college so far as capacity for commercial farming is concerned? —Yes.

10161. And it appears to me also that you are not very much in favour of what are called agricultural bias schools?—No. I am not.

10162. You have decided views on the subject of technical schools?—Yes.

10163. You know that in Bombay technical schools of the Loni type have been established for sometime and the Bombay Presidency has gone ahead with this experiment? Are you watching that experiment?—Yes.

10164. Have you formed any opinion at the present stage as to the merits of those technical schools?—I have never been in Bombay to see; but I think we want something rather different from the Loni type of school.

10165. What is your idea of the school you want?—My idea is to institute purely technical schools teaching practical farming with only just sufficient science to enable the student to appreciate the reason of the operations carried out; the whole teaching should be in the vernacular, so that when the boy passes out, he cannot possibly enter Government service.

10166. What is the difference between this type of school which you describe and the Loni type?—I think there is a difference, because I want the boys who come into these schools to leave the high schools above the fourth form. That is not exactly the Loni idea.

10167. If the instruction is purely through the vernacular, how do you get over the difficulty of explaining the scientific terms?—I do not think that is a very big difficulty. If necessary English words can be introduced for technical terms and I think that a small committee of educationists could easily translate all these terms and convert them into the vernacular in some way that could easily be understood. I find no difficulty about that at present. For instance, they call sulphate of ammonia by a common name. I do not mind what name they use so long as they really know what they are talking about.

10168. Sulphate of ammonia, that is not what I mean by a scientific technical term?—I only give that as an example. I think there will not be so much difficulty as people are apt to imagine. That is only my opinion.

10169. With regard to demonstration and propaganda, you are depending at present on one Demonstrator for two talukas. Is that right?—Yes.

10170. And you have no other machinery? You have no other non-official agency, for instance, of the type of the Bombay Taluka Development Associations here?—No.

10171. And you are against these Associations?—Yes; I am, for Madras.

10172. Then I wonder how you propose to reach the masses throughout the district and carry information about your improved methods or research to the very doors of the ryots?—If I had enough Demonstrators I could do it.

10173. Do you hope that the Local Government will ever be able to find the finance to give you an adequate staff to carry the knowledge of improvements to the very doors of the masses?—Certainly.

10174. You hope to find that finance from the Local Government?—Yes.

10175. But why are you against enlisting the sympathy of a non-official agency like the Taluka Development Association if you can get it?—What

experience I have in this Presidency is of the local Agricultural Association which failed hopelessly.

10176. That was precisely the experience of the Bombay Presidency. This new scheme was started there with this difference, that the Government gave a subsidy to the Taluk Development Associations, and also a good deal of guidance and direction through their Co-operative Department. If you were satisfied that the Government subsidy in Bombay had proved a successful remedy, would that alter your view?—I do not think it would. I should have to know a good deal more about them than I do now. My difficulty is that my experience shows they depend almost entirely for success on the energy of one or two men, and when those men disappear the whole thing collapses.

10177. Quite so, but at the present moment your machinery for propaganda and demonstration is hopelessly inadequate, in my opinion. That being so, would you not accept even an inefficient non-official agency if it comes to your help?—In the sense that it is better than nothing?

10178. Certainly?—Yes. One has always to accept that. But I do not like to accept inefficient things.

10179. You have here for cattle improvement a Deputy Director in charge of livestock?—Yes.

10180. And I understood you to say the other day that he had only 12 premium bulls for cattle breeding. Is that correct?—Yes.

10181. Do you not think that 12 premium bulls for a Presidency, the agricultural population of which is something like 3 crores of people, are inadequate?—Totally inadequate, I quite agree. But it is a new idea only just started and I hope to see thousands of bulls on the premium system some day. The system has only been in operation for three years.

10182. You mean this officer has been appointed only for the last three years?—No. I refer to the system of premium bulls.

10183. Here again if I might be permitted to refer to Bombay experience, I think they have something like 160 premium bulls and they find that number inadequate?—Yes.

10184. And the Punjab is maintaining something like 2,000. Now, if you go on making experiments on this small scale, taking into consideration the millions of cattle there are, do you not think that this is merely playing with the problem?—I do not agree. The system is that, if anybody takes the bulls, a municipality for instance, we grant them a premium for their upkeep. That, I think, is a good system, and one we are developing. Government finds the money to pay the premium. We should certainly like to have 2,000. It is only a question of money and time.

10185. With reference to castration, you say at present young bulls of one or two years of age roam freely in the villages and that is one of the reasons why there is promiscuous breeding. Are you in favour of legislation in order to enforce castration at an early age?—I do not like compulsory legislation, on general principles. I find it makes things unpopular and raises all sorts of side-issues. I do not like compulsion by legislation unless it is absolutely necessary. It may be necessary as a last resort.

10186. Is that the ground on which you are also against compulsory primary education?—Yes.

10187. The other day I understood you to say that you were against it because the time had not arrived yet?—In that case I do not think it has. I think it would be even more unpopular.

10188. Am I correct when I infer that, so far as the Pest Act of Madras is concerned, you are in favour of compulsion?—Yes, because in that particular case, though I do not like it, it is the only thing which can be done. It is in that case the last resort.

10189. If you are in favour of compulsion in a minor matter like the Pest Act I do not understand how, on principle, you can reconcile that with your

opposition to compulsion in a fundamental matter such as primary education, which concerns the literacy of the masses, which is so necessary for the dissemination of knowledge of agricultural improvements?—I think I can explain that. In the case of the Pest Act for cotton I can think of no other method. I may say I am in good company as to that. Every big cotton growing country in the world has found that it is the only thing to do in that particular case. If I could find some other method I would abolish compulsion to-morrow.

10190. That merely means you are choosing your own method of compulsion. Have you carried out economic surveys of any tracts or villages in this Presidency?—No.

10191. *Professor Gangulee:* Has not Dr. Slater carried out a number of such surveys?—I have not; my department has not.

10192. *Mr. Kamat:* Do you agree that the Agricultural Department should know by definite data the economic progress of the village population and the economic condition of the people?—Yes, I do.

10193. Would you then advocate that some members of the staff of your department should occasionally undertake such economic surveys?—Yes; I would like to modify my reply to that and to say that I certainly think that this economic enquiry ought to be made. I am not sure that it should be by my department, but given the staff I have no objection to doing it.

10194. You have no objection?—I would rather it was done separately and a special staff provided for it.

10195. At the present moment, from such knowledge as you have, do you think the standard of living of the agriculturist is going up or going down?—Going up.

10196. Are you decided in that opinion?—Yes.

10197. Has his purchasing power also increased?—I believe it has.

10198. Would you give me an idea by what percentage it has gone up; would it be, say, 5 or 10 per cent.?—I could not put it in figures; there is no means of knowing exactly. I base my opinion on the fact that in different places I see people tiling their houses, wearing better clothes and that sort of thing.

10199. But that does not give a definite idea as to the rise in the purchasing power of a particular locality; it only means, of course, that to a certain extent the standard is rising?—That is true; but until an economic enquiry is made I do not see how that figure can be arrived at.

10200. Might I refer you to this Popular Account of your Department and to some of the very interesting tables which you have given at the end of Appendix A with regard to the nature of improvements on various crops, the acreage under those crops and the resulting gain per acre to the ryots. You also give in another column the possible remedies?—Yes.

10201. Now you claim that by the spread of knowledge of your new improvements in the Madras Presidency the total additional produce is something like 2¼ crores?—Yes, per year.

10202. All that gives some indication, if your estimate is correct, of the new additional wealth created by agricultural improvements?—Yes.

10203. Are you quite satisfied with the volume of that increase? Are you quite satisfied with your progress?—I think so. I do not mean that I do not want to go any further. But considering that this department was only founded in 1908, I am fairly satisfied with the progress.

10204. Would you consider there is a very satisfactory rise in the purchasing power of the ryots?—Yes.

10205. You would?—Certainly.

10206. *Sir Henry Lawrence:* That Report is dated 1922, is it not?—Yes.

10207. *Mr. Kamat:* 2¼ crores in the total seems to be a very satisfactory figure. But I suppose you have got something like three crores of people taking part in agriculture in this Presidency. Is not that the case?—Yes.

10208. 2¼ crores divided between three crores of people comes to how much? Is it about 12 annas per head per annum?—Yes.

10209. In consequence of the achievements of the Agricultural Department the ryot has an increased purchasing power of 12 annas per annum?—I do not think it is a fair argument to divide the amount by the total population like that. It is not as if it were share and share alike. Some people get less than 12 annas and some people get Rs. 15. The longer we go on, the more they will reap.

10210. Unless you distribute it on a *per capita* basis how are you going to arrive at the average rate?—That is not the way to calculate it. What I say is this: if I take a group of people it is something if they get Rs. 15 to Rs. 20 each, even though others get nothing.

10211. Do you not think that for the general prosperity of the ryot we must seek some other solution in addition to this solution of improving their agricultural methods, some such solution, I mean, as a subsidiary occupation?—Yes, I am prepared to agree on that point.

10212. I mean to say that you should not concentrate only on agricultural improvements but you must also give attention to the promotion of subsidiary industries as spare-time occupations?—I agree, but that is not my business.

10213. I want to know what the Madras Government have done with regard to the question of spare-time occupations?—They have no scheme as far as my department is concerned. I cannot speak as to other departments.

10214. Do you agree it is high time to consider this question, that in addition to research and certain improvements of crops, it is also necessary to find out suitable spare-time occupations for the villagers in this Presidency?—Certainly.

10215. Do you think that a separate special officer should be appointed to institute an enquiry and find a solution?—Yes, but I think that should be done by the Industries Department. They are organised for that. That is my personal opinion.

10216. Taking up that point then, has the Director of Industries considered what subsidiary industries are suitable?—I cannot speak for the Director of Industries.

10217. It has a bearing on your department and the prosperity of the ryot?—All I can tell you is that the Madras Government have been recently discussing some such scheme and that the Director of Industries is making some preliminary survey through his department. I am speaking about another department now and I am not absolutely sure of the facts.

10218. Can you give me an idea of the pressure of population on cultivable land?—It varies; in the deltas it is high; it is not so high in the dry areas.

10219. To your knowledge has the pressure been increasing during the last decade?—No; I should say it is getting to a stationary point.

10220. You mean it is stationary?—It is not increasing very rapidly.

10221. It is not increasing?—I think not. One would have to examine the figures on that point.

10222. May I ask you a question which is not directly concerned with your department, *viz.*, whether, considering that the present proportion of population that depends upon agriculture is 71 per cent. you visualise the time when a certain proportion of that 71 per cent. may be absorbed into general industries if such industries were started?—Yes, I think it is bound to happen if industries are started.

10223. In view of the pressure of population do you look upon the establishment of industries with favour or disfavour?—On the whole with favour.

10224. In the interests of agriculture itself you would desire that some proportion of that 71 per cent. should be absorbed by the general industries?—

Absorbed in industries which deal with agricultural products; that is the way in which I would put it. I would look on it with particular favour, if I may say so; it is a thing I have advocated for years.

10225. *Professor Gangulee:* Such as the oil crushing industry?—Yes.

10226. *Mr. Kamat:* And similar industries?—Yes.

10227. Has any attempt been made in the Madras Presidency to start Land Mortgage Banks either through the co-operative societies or by any other means?—Yes, through the Co-operative Department.

10228. What is your opinion as to the success which has so far been achieved?—I have very little experience; I am afraid I have no knowledge of the subject. It is entirely in the hands of the Co-operative Department.

10229. You have not heard the result?—It is only hearsay. Some have succeeded and some have not.

10230. *Rao Bahadur Muniswami Nayudu:* How many Demonstrators are employed in this Presidency?—113.

10231. What is your view as regards the number of Demonstrators required?—My aim is to have at least one Demonstrator for each taluk.

10232. They deal with the village people?—Yes.

10233. And they converse with them in the vernacular?—Yes.

10234. What are the qualifications of a Demonstrator?—He must pass through this college and take an agricultural degree of the University of Madras, or a similar degree in some other University.

10235. May I know the latest figure as to the number of pupils you have recruited for this college? I think you recruited 40. How many of them know Tamil and how many Telugu?—I cannot tell you straight off. I have not got the figures with me, but I will get them for you.*

10236. Can you tell me how many know Telugu?—Very few; it is with great difficulty that we get Telugu students.

10237. Have you any proposals for increasing the number of Telugu-speaking Demonstrators?—No; I am always short of them. I should like to have more suitable men from the Telugu districts. Speaking generally we do not get the right sort of Telugu-speaking men.

10238. May I take it that you have no proposals at present for increasing the number of Telugu-speaking people?—I have no proposals.

10239. As a result you have to dump the non-Telugu people on the Telugu areas?—I have to.

10240. Is that not unsatisfactory, because they cannot converse with the Telugu people?—I agree; I want more Telugu men.

10241. Would you therefore consider the employment as Demonstrators of people educated in the vernacular middle schools?—No. Demonstration is difficult work and I want the best men, really good men. They must at least have a University degree.

10242. Then would you contemplate using the vernacular as the medium in the degree course?—To begin with, the Madras University would not allow it. English is one of the subjects they insist upon.

10243. Would you favour the starting of a separate agricultural college under the Andhra University?—No.

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* Figures supplied later by Mr. Anstead of the linguistic distribution of students at the Agricultural College, Coimbatore (December 1926):—

Tamil	37
Telugu	12
Malayalum	28
Kanarese	3
	80

10244. So you would continue to put in non-Telugu people for demonstration work in the Telugu areas?—That is all I can do, unless some men come from the Telugu districts. I see no reason why they should not.

10245. Do you not think that the situation of this college is a handicap to Telugu-speaking people coming in?—Possibly; but they come from all parts of the Presidency.

10246. Would you favour the opening of an Agricultural College in the Telugu districts?—I do not think so, not yet. I would rather spend the money on something else.

10247. Would it be impossible to employ in the Agricultural College teachers with a good command of the vernaculars to teach all the subjects that are taught in a college?—It would be impossible under existing conditions because, as I have already stated, this college is affiliated to the University of Madras. What course is to be adopted and how it should be taught is settled by the University. They have no provision for teaching in the vernacular.

10248. That is why I suggested that you might consider the opening of a college under the Andhra University?—To get over that difficulty, yes; but it would be a luxury to have two colleges, and you could spend that money usefully on something else.

10249. You should see it from the point of view of public service and not merely as a luxury?—I want the students to go back to the land. I look upon one college as a necessity; I look upon two colleges as a luxury. All we can do to meet this difficulty is to encourage such students by every means in our power.

10250. Why do they not come; you must be able to tell us?—I have never been able to understand why they do not come.

10251. With reference to the agricultural middle schools, you require fourth form standard, at least, as a qualification for students?—I think so.

10252. As regards students who fail in those schools, would you consider them fit to be employed as deputy demonstrators to help the Demonstrators in their work?—No, they would not be good enough.

10253. In Bombay students who come out of the vernacular middle schools are employed as *kamgars*?—I know they are; but I do not agree with that policy.

10254. What do Demonstrators do?—They do a great many things; they go round, get into personal touch with the ryots, suggest improvements, demonstrate and explain new methods and so on. They are responsible for distributing improved types of seeds, letting the cultivator know where he can get manures, demonstrating special crops; and, if it is a sugarcane district, teaching the use of the *sindiwahi* furnace and improved methods of preparing jaggery.

10255. Do you require an agricultural graduate to distribute seed?—I do, yes.

10256. Why?—I can see no other method of distributing seed except through the present organisation of the department. There are no seed merchants or co-operative societies to undertake that work; it therefore becomes part of the work of the Demonstrator. To carry out all the work involved in the distribution of seed I must have a graduate.

10257. Do your Demonstrators control seed farms?—A large number of seed farms, especially in the cotton area, is run by groups of ryots and looked after by the Demonstrators.

10258. Let us confine ourselves to rice. There is practically no difficulty in running seed unions in the case of rice?—Rice is a food crop, and if you have no control, in years of famine the members who promised to make their seed available for distribution for seed are apt to eat it. For that reason seed farms are still required.

10259. It is one thing to look after a seed farm but, so far as propaganda and advertising the need for improved seed are concerned, do you require a graduate? Could not a student of the middle school trained in the vernacular do it?—Possibly he might, but that would involve duplicating the staff. My present staff can do that; besides, I do not like the idea of losing control. It is very important that it should not be taken out of my hands and put into the hands of men poorly trained and, I presume, poorly paid. It is very important that we should keep the seed pure and see that it does not get mixed. I do not like the idea of it being taken out of my hands.

10260. I do not want any persons to be taken out of your hands or out of your department; but I am suggesting an intermediate set of officers between the Demonstrators and the actual ryots, who will help the Demonstrators in the matter of distribution of seeds, while the Demonstrators will be useful for supplying the higher technical knowledge that may be necessary?—I do not think I am in favour of it; you are going to have poorly trained men and poorly paid men, and you will be putting extremely important work into their hands. The difficulties are obvious. I do not like the idea. I understand what you mean; I have thought out a scheme like that myself, but I do not like it.

10261. Do you think that men trained in your special agricultural middle schools would be efficient teachers in elementary schools?—I do, and I am very happy to say that I have got one man so trained doing that work now.

10262. If your department and the Education Department co-operate, and you recruit elementary school teachers from students trained in your special agricultural middle schools, do you think that would stimulate a larger number of students to join your agricultural middle schools?—I quite approve of that; but I do not think the Education Department will approve of it.

10263. Supposing they approve of it?—Supposing they do, I strongly approve of it.

10264. You are also aware that for the purpose of training elementary school teachers Government are maintaining training schools at headquarters and are giving stipends to the students. Supposing the whole of that cost is diverted to maintaining agricultural middle schools where general education as well as agricultural education will be given, would you consider that a better system of supplying elementary school teachers? They will be teachers having an agricultural bias?—You are now training teachers in training schools. Do you want these training schools to have agricultural courses?

10265. I want the training schools to be converted into agricultural middle schools?—I do not think that is quite right. The teachers trained in the training colleges will have a higher standard of general education than the students trained in the agricultural middle schools. I should like to see in the teachers' training college a certain amount of training introduced which would enable those teachers to teach nature study. Do I make myself clear? The teachers going to the training college are taught to teach. In the course of being taught to teach, I want nature study to be included, so that when they come out they will be able to teach nature study; please understand that by nature study I do not mean agriculture. I want them to be taught nature study as very, very distinct from agriculture, which is a professional affair.

10266. Would you welcome the employment of students who underwent a course in your agricultural middle schools, as teachers in elementary schools?—Yes; that will be good enough.

10267. Would you combine with agricultural instruction some sort of teaching in general subjects?—Yes; in my agricultural schools I teach the boys to read and write with proficiency; I think students who pass through my agricultural middle school are quite good enough to act as teachers in elementary schools, though they are not good enough to teach in a high school or a middle school.

10268. I think you can make your agricultural middle schools popular if only you can get the Department of Education to agree to employ students

trained in your agricultural middle schools, as teachers in primary schools?—Very likely; but that would be defeating the object of the agricultural middle schools. The primary object of the agricultural middle schools is not to train teachers, but to train farmers. You are getting away from my object of getting people back to the land.

10269. May I point out that many of the teachers who settle in villages come into contact with farmers?—True.

10270. Thereby you will encourage them to teach as well as farm?—Yes; there are merits in that.

10271. *Mr. Calvert:* But the training for farming is quite different from the training for teaching?—That is quite true; that is what is worrying me through all these questions; that is why I cannot agree; that is just the point.

10272. *Rao Bahadur Muniswami Nayudu:* You know that some agricultural middle schools have been started by mission authorities in Chingleput; have you seen them working?—Yes.

10273. What is your opinion of them?—My opinion is that the mission's object is very different from mien. The mission's object is not to train farmers; the mission's object is to train teachers, teachers teaching a particular thing. My object is not the same. Therefore, we do not get into very close touch. One of my troubles with missions (much as I admire the work of the missions) is this: they are often dealing with the depressed classes, men who have no land and never will have, and I see no object in teaching such men to be farmers. What I would rather have turned out of the mission schools is good general labourers. That is where we differ as a rule; I do not see what these men are going to do after they leave the mission schools. The missions say that they are going to teach and become school masters. That is all right, but it is not what I want to do; that is my difficulty with mission schools.

10274. You told us that this year there was a large number of applicants for admission to the Agricultural College because the Co-operative Department had promised to absorb a number of students after they completed their course in your college. Have the Co-operative Department ever taken one from your college?—I believe not.

10275. Do you expect to get such a large number next year?—Their only object in coming in was to get posts. I expect the Co-operative Department to keep their promise. They have not done so yet; but I expect that they will.

10276. Do you know that a few of the graduates of your college have taken to law without finding any employment whatever?—Yes; they have.

10277. Do you think that having regard to the number of men required for Government service, there is justification for continuing this college for some years to come?—Certainly.

10278. How many do you expect to be taken into Government service?—The appointments I will have to make run to 14 or 15 a year at the utmost.

10279. May I know what is the cost per head of the student population?—I cannot carry all the figures in my head; I could work it out.

10280. I think you have the Administration Report with you?—Yes, but I do not think the figure is there.

10281. *Mr. Calvert:* Could you get us that figure?—I can get it, but it has got to be worked out.*

10282. *Rao Bahadur Muniswami Nayudu:* Can you not give us the expenditure on the teaching section alone of the Agricultural College?—There again I have not got the figures in my head.

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* Figure supplied later by Mr. Anstead: the approximate cost per student per annum at the Agricultural College, Coimbatore, is Rs. 570 based on a total strength of 150 students. This is very approximate as it is difficult to separate the cost of teaching from the cost of research moreover the cost varies with the number of students.

10283. You charge Rs. 1,200 per head in the case of students coming for training from outside the Presidency?—Yes.

10284. *Professor Gangulee:* Students coming from Indian States or any other part of India?—Yes. This College is supposed to be for the Madras Presidency.

10285. *Rao Bahadur Munisuami Nayudu:* Supposing you charge fees to students resident in the Presidency, would you expect students to join the college?—No, I do not think they would join.

10286. *Mr. Kamat:* In the Poona College we do not charge any fees for students coming from Madras?—Yes; I know that.

10287. *Rao Bahadur Muniswami Nayudu:* With regard to village roads, may I take it that very large numbers of villages have no road communications at all?—Yes; that is quite a common thing.

10288. Do you agree with me that if each village were provided with a road, the economic position of the ryot in regard to purchase and sale would be considerably improved?—Certainly.

10289. And would you say that Government or the local authorities should take steps to see that every village is provided with a road as soon as possible? —Yes.

10290. Have you any idea of the resources of the local bodies, so as to be in a position to say whether they could carry out such a scheme?—I have no information about that.

10291. *Sir Ganga Ram:* Do you find the provincial roads better than the roads in the charge of the local bodies?—Yes.

10292. *Rao Bahadur Muniswami Nayudu:* May I know what provincial roads you are talking about?—Provincial roads generally.

10293. But they are maintained by the local bodies?—What I find is that when I get to a District Board road it is often a bad one.

10294. *Mr. Kamat:* Is it not a fact that the Local Government here, after enquiry, found that the District Boards were short of funds for the improvement of roads?—I believe so.

10295. They are not to blame for that?—I did not say that; I do not apportion any blame; I only say I find the roads bad.

10296. *Rao Bahadur Muniswami Nayudu:* May I bring it to your notice that in the Madras Presidency almost all the roads except the Imperial roads have been handed over to the local bodies and are maintained by the local bodies?—I believe so.

10297. Then, what provincial roads are you talking of?—I am talking of the big main roads kept up by Government.

10298. But none of the main roads are maintained by Government; they are all maintained by local bodies?—Very well, then, such roads are getting worse.

10299. What do you mean by saying that they are getting worse?—My experience generally with roads in the Presidency is that they are in a worse state now than they were ten years ago. That is the impression I have got when travelling about.

10300. Have you any idea of the budget of any District Board?—I am not apportioning blame; you were asking me about facts, and my opinion is that the roads are worse.

10301. It is common knowledge that the cost of maintaining the roads has considerably increased since the War?—Probably.

10302. Unless the finances of the District Boards are considerably improved the roads cannot be maintained properly?—Probably; but the District Boards have power to raise funds by taxation, I believe, and I also believe they have not done that.

Mr. Rudolph D. Anstead.

10303. *Sir Ganga Ram:* Have they got no such cess as a road cess?—There is no road cess as far as I know.

10304. *Sir Henry Lawrence:* In regard to Appendix A of the publication* that you placed before us, you say the net gain to the Presidency from your operations is 2¼ crores per annum. That means, by an expenditure of 10 lakhs of rupees per annum, the Agricultural Department has improved the income of the Presidency by about 2¼ crores?—That is exactly the object of giving that figure; that is the argument I was putting forward in that publication.

10305. With a larger expenditure, you would effect a larger improvement? —That is the inference I hope will be drawn.

10306. I would like you to develop a little the cattle improvement policy of your department. I have got here, in the report from Mr. Aitchison, a statement that the cattle of the Presidency are much worse than the cattle in any other Presidency in India. Do you accept that?—No, not altogether.

10307. Do you consider that the general conditions of the cattle here are satisfactory?—They are capable of a great deal of improvement.

10308. Then Mr. Aitchison makes an exception in the case of your two breeds, the Ongole in Nellore and the Kangayam in Coimbatore. Can you give us any idea of what proportion of the total cattle of the Presidency will be represented by these two breeds?—I could not give you the figure straight off.

10309. What is approximately the total cattle population of the Presidency?—That, again, I could not give you straight off.

10310. Is it 20 or 30 millions?—It is something like 20 millions; I should think.

10311. Have you any estimate of the total number of Ongole cattle?—It is very difficult to get the figure at the present moment. We are having an Ongole survey made to get that figure.

10312. Is the Ongole breed limited to the Nellore district and the Kangayam to the Coimbatore district?—Those are the great centres in which they are bred.

10313. That is, 2 districts out of 25 or so?—Yes. Those are the two best strains of cattle in this Presidency.

10314. It is a fair inference that these cattle do not represent more than 10 per cent. of the total cattle population of the Presidency?—It would be something like that.

10315. One line of advance is to improve those two breeds?—Yes.

10316. Is it the proposal, then, to get those two breeds accepted throughout all the other districts, in addition to the Nellore and Coimbatore districts?—Yes, where they will be suitable. The Ongole cattle will not do everywhere. Wherever we find they thrive, our idea is to get them introduced and distributed.

10317. They are in the plains district?—Yes.

10318. They will not do for paddy tracts?—No; these big, white cattle that you see being used in the Central Cattle farm are Ongole.

10319. For paddy areas and hilly areas, you must have smaller varieties?—Yes, the Kangayam or something similar.

10320. Do you regard it as your problem to raise the efficiency of the great mass of the cattle or to have selective breeding of these two particular varieties?—To have selective breeding of these two particular varieties, I think, would be the best plan; the other problem, to take the whole mass of the cattle, is too big. If we could have a lot more of these and have them distributed over all the areas for which they are suitable, we should have gained a great deal, and that is what we are aiming at.

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* Popular Account of the Madras Agricultural Department.

10321. Then you have a different line of advance in your distribution of cross-bred bulls, say in the neighbourhood of Madras?—Yes.

10322. I understand that your scheme of work was put before the Board of Agriculture last year, in 1925. Is that so?—Yes.

10323. And the Board of Agriculture accepted your scheme as satisfactory? —Yes.

10324. Does that represent both the schemes, cross-breeding and selective breeding?—The whole of our scheme worked out here was accepted by the Board.

10325. Was there any opposition to the cross-breeding scheme?—I was on leave when the Board met; I believe there was very little opposition, if any.

10326. I have here their resolution. One portion of it says that the Board approves cordially the schemes outlined by the representatives of the Punjab and Madras?—Yes.

10327. And you accept that as an approval of your distribution of cross-bred bulls as well as of your selection?—Certainly.

10328. Then, in some portions of the literature placed before us, reference is made to the beginning of various experiments which were then closed down and the various herds dispersed?—Yes.

10329. A number of different experiments were in progress for a short time, and those experiments have been shut down?—Yes.

10330. I take it that no very definite, conclusive policy has been adopted in the past?—Not at the very beginning.

10331. Your results, so far recorded, are somewhat haphazard and inconclusive?—May I put it this way, by reminding you that it was only ten years ago that we were allowed to have a Deputy Director of Livestock to take up this work; before that it was done in an altogether haphazard manner. Under the recommendations of the Board of Agriculture we were allowed a special officer for this work, so that the work is quite young.

10332. But there are no definite conclusions that you can draw from experiments done in previous years?—They were made in a haphazard manner.

10333. Now you want to begin from the beginning and arrive at some definite conclusions in course of time?—Yes, and be quite sure of our facts as we go on.

10334. It will take time?—A long time.

10335. And money?—Yes.

10336. Do you consider that there is a demand for the continuance of these experiments from the people who are interested in this cattle-breeding?—I do.

10337. Do you find that your cross-bred bulls are accepted willingly by any section of the people?—I do; you will find a very large number of cross-bred bulls in Madras city, for instance; they are rapidly replacing the Ongole breed as a milk herd; many milkmen in Madras go in for them and in the Nilgiri Hills you will find a very large number of cross-breds; there is a demand for them.

10338. *Professor Gangulee:* Is there any demand from the ryots?—There is a demand among the milkmen in Madras, but not so much from the ryot; when we are dealing with cross-breds we are dealing with the milk problem for the urban population.

10339. *Sir Henry Lawrence:* You have evolved here on the Coimbatore farm, Co. 205 variety of cane for distribution in Upper India; is that variety of a quality suitable for cultivation on land by your canals in Madras? —That cane is of no use to us at all in the south; we want a thick cane, not a thin cane; we want a different type of cane altogether from that.

10340. For cultivation under irrigation in South India, it is not suitable? —No.

10341. You are quite certain about it?—Quite certain.

Mr. Rudolph D. Anstead.

10342. Do you know anything of its distribution in Upper India and how far it is successful?—I believe that it is very successful. You understand, I take it, that the sugarcane station here is not mine; it belongs to the Government of India, and is not under my control, so that I do not know about it in any great detail. I am not, of course, so interested in the success of the canes in Northern India as of those in my own Presidency; but I am ready to believe from what I have read and from what I have heard from different sources that that cane has been a very great success in Northern India.

10343. For cultivation in conditions where the soil is different and where the water-supply is less plentiful?—Yes; in fact it was deliberately bred for that purpose, and canes must be bred for different localities to suit those localities. That is what is being done at this station, to breed canes to suit particular localities; that is so with the work not only on sugarcane, but on all other crops.

10344. Does any friction arise from a Government of India station working alongside your farm here?—None whatever; we are always very good friends.

10345. There is no dual control?—No.

10346. And the work can be carried on efficiently?—Yes.

10347. As regards rice, you are effecting great improvements in the varieties of rice seed that you are distributing. Is that the main problem before you? I see in some report that only a comparatively small proportion of your total rice area is transplanted; the great part is sown broadcast?—Most of the rice here is transplanted; we have broadcasted rice in this Presidency grown on rain-fed lands; we have both problems.

10348. Can you say what is the proportion of broadcast and transplanted rice?—Not straight off without referring to the Season and Crop Reports or the Statistical Report. I am sorry I do not carry these figures in my head.

10349. I think it was stated in one of these reports that the greatest improvement possible at the present moment was to reduce the seed rate of rice from 150 lbs. to 30 lbs. or something like that, per acre?—That is so; that is the seed rate we advocate for transplanting. The usual practice is to transplant in bunches of 10 to 15 seedlings; instead of that we advise them to plant the seedlings singly or in twos or threes, as they will then tiller better; you will get just as good a yield, if not a better yield, by singly transplanting the seedlings instead of planting them in bunches. To do that, you must have a good, well-grown seedling in the nursery to begin with, and in order to get that you must sow your nursery carefully. It is obvious that if you are going to transplant singly you do not want as many plants to the acre as you would if you were to put them in in bunches. You transplant the seedlings economically, either singly, or in twos or threes, and you will get as good, if not a better crop. It costs you no more to do that than to transplant in bunches; indeed it costs less, because you do not have to use so much seed; and the point of the thing is this, that the seed which you do not use for this purpose is available for food purposes.

10350. Has that improvement been taken up largely?—It has been one of our great successes; it is spreading very rapidly.

10351. *Sir Ganga Ram:* When you take upon yourself the credit of having raised the value of the produce by 2¼ crores, will you please analyse this figure into three heads: how much is due to increase of yield; how much is due to the rise in prices, and how much is due to the introduction of new crops, through the exertions of your department? Will you analyse the figures under these three separate heads and supply them afterwards?—I can do that.

10352. Have you studied the recommendations of the Irrigation Commission's Report?—I have read them.

10353. So far as the Madras Presidency is concerned?—Yes; but I have not devoted any great study to it, because I have nothing to do with irrigation.

10354. Have you studied them generally?—I have read them.

10355. Have you noticed in that Report that 0·4 of an acre irrigated is required per head for immunity for famine?—Yes.

10356. I think the calculation is made on the basis that you provide protection for 10 men out of every 40?—Probably.

10357. And therefore, can you explain the reason why there have been so few serious famines?—Because it seems to me we are able now to deal with a famine. The famines after all are local; they do not affect the whole of the Presidency; what has made famines much less serious and much easier to deal with is that now we have railways and good transport for taking food rapidly from one place to another.

10358. You mean importing from outside?—Yes, importing it from Burma.

10359. How are they going to get the money to pay for imports? You are in favour of reducing what you call money crops. If the money crops are reduced and the money does not come in, how are they to import?—May I suggest to you that if I were to grow more food crops in the Presidency instead of money crops, when a famine came I should have more food and I should not have to import it.

10360. *Dr. Hyder:* Is that quite right? In a famine year, there would be no crops anyway unless you have a carryover of food from year to year?—That is not my point. Your famine is a localised famine. You have district A which has famine. You have district B which has no famine. You can bring rice to district A from district B which has no famine. If there is not enough rice in district B, you have to go outside, to Burma. If I could increase my rice in district B which has no famine you need not go to Burma but you could put it into district A which has famine.

10361. So you store up for the future?—Not necessarily.

10362. You do not have famine all over the Presidency at the same time. You have never had it?—Not over the whole Presidency.

10363. In 1876?—That was before my time, and transport facilities have improved since then.

10364. *Sir Ganga Ram:* Is it within your knowledge that these recommendations of the Irrigation Commission have been carried out by the Madras Government?—No; I cannot say. As I said, I am not on the Irrigation Board.

10365. It is an allied subject of your department and therefore you ought to take an interest in it?—I cannot tell you what has been done.

10366. Do you know about the financing of the hydro-electric survey?—Yes, I know something about it.

10367. You have studied that?—Have you ever thought how you could use those falls for the betterment of the people?—I believe we could.

10368. In what way? By means of hydro-electric schemes?—I see a great difficulty about hydro-electric schemes. It seems to me that one of your great difficulties will be the enormous cost of your power lines.

10369. Never mind the cost?—If you are not going to mind the cost, certainly there are possibilities in hydro-electric schemes.

10370. For what purpose?—From the agricultural point of view, pumping water and running gins.

10371. I am only asking about the Agricultural Department?—Pumping water.

10372. Have you ever seen the place where your four big rivers run into the sea in this Presidency?—Yes.

10373. Have you ever observed it?—Yes.

10374. Is there any record of how much water goes to the sea through each of these rivers?—I do not know.

10375. Is that record to be found anywhere in the Madras Presidency?—I should not think so.

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10376. You observed the place just where the rivers fall into the sea? What kind of bed has the river got; is it rocky?—It is bringing down a lot of silt.

10377. But is the bed rocky or sandy?—I do not know.

10378. You say you have observed it?—When I say I observed it I mean I know where they run in.

10379. Are the banks permanent?—No.

10380. Rocky?—It is all sand.

10381. I thought you had no sand. When you turn out your students here do you give them any engineering training?—Yes.

10382. What kind of training?—We have a workshop here and they are given a training in agricultural engineering, the working of oil engines, etc.

10383. That is not so important. If a boy has got land here and he wants to sink a well, would he know how to calculate the power required to pump up the water?—Yes. He is taught that. There is a class in agricultural engineering which deals with all that sort of thing.

10384. You find employment for sixteen of them a year. What percentage go back to the land?—Practically none of them goes back to the land, or very few. One or two have gone back to the land.

10385. Is there any demand for such students by the big landlords?—None whatever

10386. They do not care for them?—They do not employ them.

10387. Why do they not employ them?—I cannot tell you.

10388. Is it not a fact that they have no practical knowledge?—No, I am not prepared to admit that.

10389. Then why do they not employ them? If they found they were useful they would employ them?—Well, would they? One thing is that the big landlords do not co-operate with the Agricultural Department.

10390. *The Chairman:* Are you satisfied that the students themselves desire such employment?—No; they do not.

10391. *Sir Ganga Ram:* Do you not think some scheme would be advisable to give them post-graduate training on practical lines under Government and then try to find them private employment?—No, that would be very wasteful.

10392. That would be an advantage to the country?—I cannot quite see that.

10393. I find from your figures that the whole of your department is costing about 12 lakhs a year?—13 lakhs.

10394. And do you know what the incidence of the land revenue is per head? I will tell you; it is Rs. 1-10-9. Now the 12 lakhs divided among the population only come to two pice per head?—Yes.

10395. Have you at any time represented to the Minister that that means 1/50th part of the land revenue? Have you ever represented to the Minister that he should claim a proper share of it?—Very often.

10396. You are aware of these figures?—Yes; I am.

10397. Two pice per head?—Yes.

10398. And the incidence of the land revenue is Rs. 1-10-9?—Yes.

10399. And therefore your department ought to claim a greater share?—Yes, certainly.

10400. You speak of nature study. Do you mean that plots of land should be attached to the schools?—Not necessarily. I think a plot of land is an advantage to nature study, but I am certain that nature study can be taught in a town; where there are rural schools I certainly would encourage small plots for nature study, but in towns where land is not available I would still teach nature study.

10401. Do you not think that cultivating separate school plots would be unnecessary and would merely be taking them away from doing useful work

in their father's fields?—No. You want a little school garden in which to encourage the children to work in their out-of-school hours.

10402. Have you any Crown lands in this Presidency, that is to say, lands belonging to Government?—Yes.

10403. What have you?—Forest land.

10404. Cultivable land, Crown waste?—Yes, cultivable waste.

10405. Have you ever attempted to get these lands on lease for the students?—I do not know that it is such a sound proposition as some people think. The cultivable waste lands are waste because they probably would only just pay in a good year; and if you are going to ask students to farm that type of land, it is not a very encouraging proposition. You have got to give them good land if they are to make a living.

10406. Do you mean to say that all the Crown lands are bad?—I do not say they are bad, but they are not the best lands. I do not think if I were a student I should particularly want cultivable waste. It would be pretty hard to earn a living out of it, especially for a young man.

10407. Do zamindars regard proximity to forest areas as an advantage or a source of annoyance?—I am afraid I do not understand that question.

10408. The cattle are liable to be caught while grazing and that sort of thing. In some parts they consider the proximity of land to land under the Forest Department to be a source of annoyance?—I do not think so.

10409. Do the Forest Department keep a reserve of fodder for famine?—No; they do not.

10410. In Bombay the Government keep a large quantity of fodder?—In the form of hay?

10411. Yes. You do not do it?—No.

10412. Do you use any denatured salt as manure for coconut trees?—No.

10413. But in Bombay they do?—I know.

10414. Is that an advantage or not? What is your opinion?—I am not prepared to accept the Bombay results as being applicable to this Presidency. I am making some experiments of my own.

10415. You are carrying out experiments?—Yes. But I would not recommend it. You will find that Bombay are among the few people in the world to say that it is doing good and I am not prepared to accept their results here without further experiment.

10416. If the denatured salt was cheaper (of course I am not talking about the composition) would you say that the owners of cattle would be willing to take it and give it to the cattle?—We always give salt to our cattle, yes.

10417. How much per head; 2 oz., 1 oz. or how much?—I cannot tell you, but we always give it.

10418. It is an advantage?—Certainly.

10419. But of course you buy the ordinary salt which is useful for human beings?—Yes.

10420. Do you think it would be possible to mix it with a chemical so as to make it unfit for human consumption and fit only for cattle?—Would not that be extraordinarily difficult?

10421. I want to know whether that process would encourage the ryot to give more salt to the cattle?—I take it that it would encourage it in that it would be cheaper.

10422. Yes?—I do not see how you can denature salt in such a way that it cannot be used for human beings, but will be fit only for cattle.

10423. Can you suggest any improvement on the indigenous methods of storting grain?—No, I do not think so. In fact we are adopting the last method in the Paddy Breeding Station.

10424. In the Punjab the Agricultural Department takes upon itself the duty of supplying pure seeds. Why should you not do that?—We do it.

10425. I thought you left it to the merchants to do it?—No.

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10426. You have your own agency, or at least some method of distributing it?—Yes; there is no one else who does it. There are no seedsmen. I have to do it myself.

10427. What do you mean by that? You must have some department?—My own department; the Agricultural Department do it.

10428. Do you sell it at bazaar rates or at a little profit?—At bazaar rates.

10429. And who stands the loss?—There is no loss.

10430. The cost of the staff?—The Government.

10431. I once planted in my village cotton trees which came from South India. Are you familiar with those trees?—There are several types of tree cotton in South India.

10432. Giving good results?—It is a very poor type of cotton.

10433. Not a paying concern?—It is not; it is short stapled.

10434. You have no frost here?—No frost here below Ootacamund.

10435. You introduce artificial manures which at best give 20 per cent. nitrogen. Have you ever thought of tapping nature's store, which contains 80 per cent. nitrogen?—By which I presume you mean making fertilisers from the air?

10436. Either fertilisers or any other method?—Hydro-electrically?

10437. Never mind how?—That matter has been considered by the Board of Agriculture and thoroughly threshed out; the conclusion arrived at was that you cannot compete with Norway in this country.

10438. How many times do you plough for *cholam*?—Once or perhaps twice with an iron plough and two to four times with the country plough. It depends on the land.

10439. Do you know that the more you plough the more you tap nature's store of nitrogen?—That is why one ploughs at all; the whole idea of ploughing is to tap nature's store.

10440. The more you plough the more you are tapping it?—I do not agree.

10441. Have you tried it? I do not want your mere opinion?—It is scientifically unsound.

10442. According to what science?—Soil science.

10443. We have got a proverb in the Punjab according to which the more you plough the more you get?—Proverbs are proverbially untrue.

10444. We do not use an ounce of fertiliser but simply by observing that proverb we get a production which is double yours; I will guarantee double your production?—As a matter of soil fertility there comes a time when there can be no more crop.

10445. Is that supported by any science?—Certainly.

10446. What is it?—Any text book on soil science will explain the point.

10447. *Dr. Hyder:* There are one or two points which I should like to clear up. Is it not the universal experience of mankind that they cannot indefinitely increase the quantity of agricultural produce from a certain area and there must come a time when the increase is not proportionate to the cost it involves?—Yes, the law of diminishing returns comes in.

10448. That is the answer to Sir Ganga Ram?—Yes.

10449. With regard to the export of manures, apart from other aspects of the matter and purely from the agricultural aspect, would you look with favour upon any measure which aims at prohibition of export or would you levy an export duty?—I would favour absolute prohibition in the case of fish and bones and an export tax on oil-cakes; that is what I have in view.

10450. With regard to crop-cutting experiments, are they carried out by your department or by the Revenue Department?—By the Revenue Department. We have no staff with which to do it.

10451. Then I understand that these crop-cutting experiments are not done by you?—We have not done them for a number of years for that reason.

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10452. It is an important matter from the statistical point of view, is it not?—It is necessary. My position is that my present staff cannot do crop-cutting experiments. If I am to do it I must be given a special staff; this I have asked for from time to time. The staff would not be engaged all the year round on that work; it only comes in certain months during harvest time: the rest of the time they could demonstrate. That is the proposition before the Government, but it has not materialised.

10453. Coming to another matter, I suppose you would be in a better position to estimate the total agricultural production if you had staff for the purpose of such experiments?—Certainly; my estimates would be more accurate.

10454. Now with regard to farm accounts, could your Demonstrators compile model farm accounts and get from every taluk one or two people who could fill them in?—It would be very difficult to do so; when you begin to ask for the accounts of the cultivator he immediately grows suspicious and thinks you are going to have his taxes raised and therefore the returns he gives are not correct. If I may develop that point a little, I think a lot of the kind of work you are aiming at could be done by the students of the University. There is a chair of Economics in the University.

10455. As a question of research?—Certainly. If graduates were given scholarships for this purpose they could do it very well. The cultivators are rather suspicious when officials ask them for their accounts; they think there is something behind it and they do not state the actual facts.

10456. *Professor Gangulee:* It would be necessary for people engaged on this research to co-operate with the Agricultural Department?—Yes.

10457. *Dr. Hyder:* You want more money for development here and more money for development in the central institute?—Yes.

10458. You might have one day an Imperial Agricultural College like the one at Trinidad?—Possibly.

10459. Can you suggest methods of raising additional funds for these purposes? Would you be in favour of a cess or an acreage rate? Which method do you think would be more advantageous?—I must admit that I have been in favour of a cess. Sir James MacKenna was good enough to point out that I was probably wrong; I have not given an immense amount of thought to it. An acreage rate has certain advantages. Personally I was for the cess.

10460. Suppose a certain amount of money is raised on the export of rice? —Yes.

10461. That money is to be devoted to research on paddy; it would all go for the benefit of Burma; so Burma could have no grievance?—Quite.

10462. Would you not like to have a permanent fund, that is, a certain amount which would always be available, rather than a fund which would be dependent upon the surplus available for export which might disappear and would always vary from year to year?—Yes, I would.

10463. There might come a time after five or seven years when your income and expenditure might not balance?—Yes, I see the point.

10464. With regard to the sending of young Indians to foreign countries, I take it that you would only send such students as are likely to be useful in research?—Yes.

10465. And I take it that you would send members of your department who have got some practical experience?—Yes.

10466. Do you not think it would be better to catch bright young students, first class graduates of the Madras University who have received a broad training in natural science and have specialised in science, and send them to some University or institute in a tropical country like Trinidad, rather than send people whose habits of mind are settled?—No, I do not agree to that; I want experience in the department first. I would rather not send a man until he has had seven or eight years' training, so that I can be perfectly sure that he is the man I want for the job.

Mr. Rudolph D. Anstead.

10467. Then send him to England?—Whatever place is best for the particular purpose. We have just sent a man for training in paddy-breeding under Professor Biffin; I have sent him to the man and not to the place. Rothamsted happens to be in England and is the best recognised agricultural station in the world; but if necessary the student may be sent to Germany or America or wherever the best training for the job could be had.

10468. To learn the process of research, not necessarily research in paddy in particular?—Not necessarily for paddy. In this particular case I want him to learn genetics and nowhere else can that knowledge be acquired better than under Professor Biffin at Camridge.

10469. *Dewan Bahadur Raghavayya:* You have referred in your evidence to the co-operation in different measures which you have received from different departments?—Yes.

10470. May I know what is the attitude of the Revenue Department to your work and to your department?—The Revenue Department is a department with which we very seldom come in touch at all.

10471. Is it not the largest department and the most in touch with the ryot population?—True.

10472. Should you not think of utilising the Revenue Department in pushing your own objects, for instance, in your propaganda work, in seeing that the results of your laboratory work reach the ryot?—I do not quite see how that could be done.

10473. It may be done this way. Supposing as Professor Gangulee mentioned on Saturday, the Revenue Inspectors and the Tahsildars could be recruited from men who have taken degrees in your college? Another way of securing greater co-operation and greater interest in your work from revenue officers is to give them training in agriculture; a short training it may be, but sufficient to awaken their interest in agriculture?—That could be done; yes.

10474. More than 30 per cent. of the men working as Tahsildars and Deputy Tahsildars are graduates; and you agree that they could be given an agricultural training which would awaken their interest in agriculture, and would improve the work of your department?—I agree to all that in general principle.

10475. Do you not further think that, occupying the position he does, the Collector of the district should be more in touch with the work of your department than he is at present?—The attitude of the Collector in a district towards the work of my department makes a good deal of difference; it is very important that the Collector should be interested in agriculture; where the Collector is interested I can do a lot; where he is not interested I cannot do so much. I am very happy to say that a great many of the Collectors are extremely helpful to me.

10476. At present the Collector is not in any way connected with the work of your department, except perhaps that he officially visits some of your experimental stations?—That is so.

10477. Could not the correspondence of the Deputy Directors of Agriculture to headquarters pass through the hands of the Collector? Would not that stimulate the Collector's interest in Agriculture?—No, I do not think so; I should think he would look on it as an addition to his work and a nuisance. It would have the effect of overburdening him with work and the advantages would not be very great. We get from the Collector information and help on all points where we require it.

10478. That is not my experience as a Collector in regard to work connected with the Police or the Forest Department?—But this is not his work; he cannot look with favour upon any addition to his duties; he has a lot of work to do as it is.

10479. There must be certain duties that he should do, and this will be one of them?—I am not in favour of adding to the burdens of the Collector.

10480. *Dr. Hyder:* The Collector is primarily concerned with law and order and revenue?—Yes.

10481. *Dewan Bahadur Raghavayya:* But he is also concerned with the economic condition of the people. You are not in favour of compulsory education?—No.

Do you know that there is a very big movement for universal compulsory education in the Presidency, that the District Education Councils receive many applications for the opening of new schools, and 15 of the Municipal Councils have adopted compulsory primary education as their policy?

Mr. Calvert: That is in the urban area?

Dewan Bahadur Raghavayya: Yes, and in the rural areas the number of schools giving primary education has been increasing very rapidly.

Professor Gangulee: Do you get a sufficient number of teachers?

Dewan Bahadur Raghavayya: That, I think, is the difficulty; there is a number of training institutions, and I believe their number is being slowly increased.

The Chairman: Do you notice, Dewan Bahadur, that the witness has not answered your question?

10482. *The Witness:* I did not realise that it was a question. You were making a statement of fact. Do you ask me whether I approve of it? Is it not an argument in favour of my view? Those districts in which there are many applications for new schools have reached the stage when there should be compulsory education. They come forward and ask for it; that is exactly what I would like; I would not use compulsion in those districts which have not reached that stage. The point is they should come forward and ask for it when they are ready for it; but do not compel those who have not reached that stage.

10483. *Dewan Bahadur Raghavayya:* Your argument is that there will be universal education without compulsion?—Ultimately, without compulsion.

10484. Will that be soon?—I cannot say how soon.

10485. I notice that the average size of a holding in some of the districts in North Arcot and South Arcot, for instance, is below 3 acres?—Yes.

10486. And there are 5 million *pattadars* in the Presidency holding among them 9 million acres of land, which averages less than 2 acres per *patta.* Do you not think the question of consolidating holdings, or creating economic holdings by the consolidation of small-sized holdings, is one which has got to be very seriously considered?—I think it has. I think it is going to be extraordinarily difficult, but I am not opposed to doing it.

10487. You are not opposed to compulsory consolidation?—I am opposed to any form of compulsion; I think it can only be done by education and persuasion. I think if you start compulsion, you will raise serious opposition and you will have to abandon it. Either do it voluntarily, or not at all; that is my opinion.

10488. From your experience of the working of the co-operative societies in this Presidency, do you think the co-operative societies could be used to start the movement for consolidation?—I am sure they could; you have the agency there. It is for that department to do it, not for the Agricultural Department. It is a co-operative job.

10489. You were complaining that minor irrigation works were being neglected?—Yes.

10490. Do you think if you entrusted the restoration and repair of those works to non-official bodies like the co-operative societies and village panchayats, the work would be done well and efficiently?—No; it would be done in some places but not in others. We come back to my old statement that some are doing good work and some do nothing; and if we entrusted it to them, we should not get much done.

10491. Do you not know that even now, where co-operative societies and village panchayats have come into being, the ryots undertake the work if the revenue officers encourage them to do so, and carry out those works much

more economically than would otherwise be the case?—Exactly; that is my point; if the revenue officers take some interest it makes them do a lot. I want to see that they always do take that interest; not only very often, but in every case. There should be a separate revenue officer attached to the Irrigation branch of the Revenue Department for the purpose.

10492. Have you made any systematic investigation into the quality of the soils of these 2½ million acres of cultivable waste in this Presidency?—No, not a special survey of it, but we have made five complete surveys in five different districts of the Presidency, and in that will be included this cultivable waste.

10493. Not necessarily?—It may or may not be.

10494. Your investigation is confined to delta districts?—Yes; but the soil of cultivable waste would be included if there were any.

10495. But the bulk of the cultivable waste will not be?—We have made a large number of soil analyses, and if you want an analysis of any definite soil we have probably got it.

10496. It may be poor soil, but if it is soil which can be cultivated, do you not think a scheme of land colonisation, not necessarily by students, but by educated youths, should be investigated and started if it is feasible?—Yes, certainly investigated, and started if feasible. But my point is that the waste land at present out of cultivation is often out of cultivation owing to the fact that it is poor land. To give that land to a batch of students, or whomsoever you want to put on the land, is not a particularly generous kind of gift.

10497. Is not the non-cultivation of these lands really due to the fact that cultivation is not carried on on scientific lines and that the necessary amount of capital is not brought to the aid of cultivation?—Not in all cases, I think.

10498. But in some cases?—In some cases, I agree. I have no objection to having it investigated and started if feasible. My doubt is as to its feasibility.

10499. Have you tried to cultivate tapioca on the East Coast, as you have grown it on the West Coast?—We have grown it on the West Coast; but it does not grow well on the East Coast. You will find that it needs rather rich soil.

10500. On the West Coast of the Presidency it grows generally on poor soils?—But then what apparently is poor soil on the West Coast is not always poor; if you put water on that soil it may be extremely rich. The difference in fertility of the same type of soil on the East Coast and the West Coast is very largely a matter of rainfall. In Malabar you have an average of 120 inches while on the East Coast you have got an average of 23 inches. If you take the same type of soil on the two coasts, that on the West Coast would be found to be more fertile on that account.

10501. In the Circars in the North of the Presidency, there are some large areas which are subject to water-logging and submersion?—Yes.

10502. Is there any scheme for the reclamation of those areas by pumping out the water, as is done on the West Coast of the Presidency?—I believe not.

10503. In regard to the appointment of Indian officers under the Agricultural Department, I cannot reconcile what you told Dr. Hyder with what you have stated on page 34, paragraph 14, of your written reply. In the written statement you say: "It is necessary in the first place to recruit European research officers to start the work and train their own Indian assistants who can ultimately take their places." I understand that the stand you now take is that you will recruit graduates either from your own College or from the Arts Colleges, employ them in your own department for a time, and if they are promising you will send them to another country or to any expert under whom they can get a proper training for the work they have to do. That strikes at the root of your opinion expressed in the written statement that European officers should be recruited for research?—I fail to follow that.

10504. In your reply you accept the policy of Indianisation, and you say that the way in which you would recruit your research officers is to take

Indians and train them for a certain time here in your department and then send them out to places where they can get the best advanced training?—Yes.

10505. Then, there will be no need for your European research officers?—Your starting point must be the European officer, because you have not got enough sufficiently trained Indians.

10506. Are not your present Indian officers, who are experts, and are doing research work in different departments, trained already?—They have been trained by European officers.

10507. Granting that, are they not capable of training the Assistants under them, so as to make them fit for going out for advanced training in other places?—Not sufficiently well.

10508. Your starting point in this Presidency was European officers, a big staff of European officers and men with pretty big names. They trained as Assistants these Indian officers, who have now taken their place?—I do not think that the Indian officers who have taken their places can train other Indian officers sufficiently well. I still want to send them home. The starting point is the European officer.

10509. *Mr. Kamat:* You say you want to train Indians who can ultimately take the places of the Europeans. By "ultimately," what do you mean?—In course of time.

10510. About how long?—I am not prepared to lay down any hard-and-fast time. If you want to know how long I think it will be before you can really and efficiently replace the whole of the European research workers in this country by Indian trained officers, trained sufficiently well, I should put the figure at round about 30 or 40 years.

10511. By that time you think that an Indian may take the place of the Director of Agriculture?—Yes, I think so, but probably not till then.

10512. *Dewan Bahadur Raghavayya:* Am I to take it that even the preliminary training which an untrained man in your department should get in this country has to be given by European officers?—In research, yes; post-graduate and research training should, I think, at present be done by European officers, as far as possible; there are exceptions, but they are very few.

10513. *Sir Ganga Ram:* There is a certain amount of well irrigation in this Presidency?—Quite a lot.

10514. Is it done by bullocks or by oil engines?—It is done by both.

10515. Can you say how great an area they command?—Yes; if you will be good enough to refer to the statistical Season and Crop Reports, you will find all you want to know about it. I cannot carry all these figures in my head.

10516. Is it a paying proposition to pump up water?—That entirely depends on the well.

10517. Or on the nature of the crop?—It very largely depends on the well, it does not pay to put up an engine and pump on a well which pumps dry in a few hours. If it is a good well and has a big supply of water, it will be a paying proposition.

10518. To what depth do you pump? What is the depth of the wells?—From 30 or 40 to 60 feet; it does not matter.

10519. It must matter?—Of course there is a limit to the depth from which you can pump water; you can pump up to the limit to which your pump will yield water.

10520. Is there any special kind of crop that you can grow? In Chatterton's book on Lift Irrigation you must have read that with well irrigation you can get Rs. 2,000 per acre by growing certain crops. What are those crops?—I should like to ask him, what they are?

10521. Have you read the book?—Yes; he is probably referring to sugarcane, but his figure is far too high.

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10522. Have you got any analysis of borings? Do you take borings of the soil?—Boring is done by the Industries Department.

10523. Where can I get the information as to the results?—You mean the samples?

10524. The nature of the soil down to 300 feet?—The Industries Department do the boring.

10525. That is not under you?—No.

10526. Can you tell me the analysis of the soil before and after growing each crop? What chemical properties does it retain, and what chemical properties does it lose?—I can tell you what food crops take out of the soil.

10527. What does paddy take out of the soil?—I can give you that figure; it is one of the things I happen to have in my head. I will take a crop of paddy, straw and grain of 2,000 lbs. per acre.

10528. What is it per acre?—32 lbs. nitrogen, 15 lbs. phosphoric acid, and 27 lbs. of potash.

10529. Have you got these figures for every crop?—Not for every crop, but for all the important crops.

10530. How much is it for *cholam*?—I think my Chemist would be able to answer that question.

10531. How do you propose to replenish all that loss?—By manure.

10532. But these people could never use so much manure. How does the poor ryot replenish the soil? Of course his soil also loses the same chemical properties?—Yes.

10533. How does he replenish it?—He has got to go back to the methods of doing it, which we attempted to show you this morning.

10534. May I know what other method he can adopt except artificial manure?—Better methods of cultivation, better preservation of village cattle manure, increase of the cattle manure by making synthetic farmyard manure, turning all his refuse and, as far as possible, night-soil, into manure that can be handled, and introducing artificial fertilisers.

10535. Have you got any returns of imports and exports of food grains?—Yes.

10536. I see from the papers that you export onions to Karachi and Rangoon. Do you grow large quantities of onions?—Quite a lot.

10537. One crop or two crops?—One.

10538. When does it mature?—Just about now, I think.

10539. I will tell you why I ask the question. In the Punjab we import a large quantity of onions, which are called Karachi onions. We grow only one crop of onions in April, and it becomes useless in the month of October. I think you might consider the question of exporting onions to the Punjab. Do you produce sufficient potatoes for your requirements?—No.

10540. Do you import them?—Yes.

10541. Why cannot they be grown here?—We have not got sufficient area in this Presidency suitable for potatoes. They will not grow on the plains; they are grown on the hills.

10542. *The Raja of Parlakimedi:* Are not potatoes grown as a garden crop? —Yes, they are grown as an irrigated garden crop, but that hardly pays.

10543. *Sir Ganga Ram:* Do you import potatoes from Italy?—They come from Italy through Bombay; our biggest import comes from Bombay, and it probably comes from Italy.

10544. Supposing you got an enormous amount of funds, could you give us a three years' programme of research?—Yes, certainly; if you tell me what amount of money I can have, I will tell you how I propose to spend it.

10545. Could you tell us what amount of money you would like to spend on what research?—Yes.

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10546. We were shown these marvellous results obtained by your department at the cane breeding station. Can you tell me how much water they use?—That is a question which, I think, must be referred to the people who are running the station.

10547. Could you tell us what depth of water they require, how many inches?—I am afraid I cannot tell you that.

10548. Does anyone control the quantity of water they use?—The Irrigation Department control it, and they have their own wells.

10549. Do they control it?—Yes.

10550. Your breeding station would not be allowed to take more than is allotted to them?—They would have the water stopped like anybody else.

10551. Can you give me any information as to the depth of water required for maturing *cholam* and other crops, supposing the crop were on wet land?—We could tell you.

10552. Can you make out a statement of that?—Yes.

10553. Please make a note of that. If, by means of power created by falls, you could pump up water over the whole of this Presidency from the rivers, at a cost not exceeding Rs. 100 per acre, would that be a good proposition?—I should think it would be an excellent proposition.

10554. Would not that appreciate the price of land?—Yes.

10555. What is the price of dry land now? Is it Rs. 40?—Say, Rs. 40.

10556. Supposing it became wet land, what would its value be?—For paddy land, it may go up to Rs. 3,000 to Rs. 4,000 per acre in the deltas.

10557. That would be the extreme limit. If ordinary dry land were converted into garden land, by how much would the price increase?—It would increase from Rs. 40 an acre to Rs. 300 to Rs. 400 an acre.

10558. *Dr. Hyder:* Have you large and perennial rivers in the Presidency, besides the Godavari and the Kistna?—Yes, there is the Cauvery.

10559. They are perennial rivers?—Yes; they are very big rivers. Of course, there is very much more water in them in the monsoon, but they are perennial rivers.

10560. *The Raja of Parlakimedi:* You have just told us that the Telugu districts are not taking full advantage of this college. I think the distance is also a factor to be considered, is it not?—I do not think so. We have a good system of railways in the Presidency, and the distances are not very great. If you will look at the map at the end of my Administration Report, you will find that Coimbatore is fairly central.

10561. In comparison with the northern parts of the Presidency is that so? What about the people coming down from Ganjam?—It is a little way from Ganjam, but it is not an enormous distance; I do not think that is a factor that keeps people away.

10562. It does in certain respects. Would you have any objection to having sister institutions teaching up to two years provided at different centres?—Up to the second year? It is a three years' University course, which I cannot interfere with.

10563. They can come to your college for their final year's course?—I do not think it would be possible to teach them for two years in local institutions and finally for one year in this college.

10564. You might give them some sort of tuition?—I do not think so.

10565. There is an intermediate course up to a certain stage?—Here it is the final University degree course; there is no intermediate course here. You cannot take the final course and get a degree until you pass your intermediate, but we do not teach an intermediate course in the college; there is no agricultural intermediate course; we tried to get one, but failed; the University would not give it to us.

10566. I am suggesting two more colleges for the benefit of the Northern Circars and the Tinnevelly district; that is my idea. What do you think of

it?—I have been told that this college is so costly, and more costly than it ought to be for the few students we have; if the proposal is to have two more such colleges, it would make it still more costly.

10567. If the funds were available, would not that be the best idea?—It seems to me that to have three colleges to teach 40 students a year is a very expensive proposition.

10568. As regards demonstration farms, have you any objection to increasing their number?—I want a very much larger number of them, but I must have the staff for them. A Demonstrator can only look after a limited number; the two things should go hand in hand; if we have more demonstrations, we must have more Demonstrators.

10569. Do you in the farms which you now have concentrate upon the important crops grown in their areas?—Are you speaking of experimental stations?

10570. Yes?—I concentrate on the important crops in the area. Each farm is there for a definite object, and has a definite programme of work before it.

10571. Is not demonstration conducted on the farm?—No, you cannot demonstrate on an experimental station.

10572. Do you ever invite the enlightened ryots and landholders to the station?—We do, but they seldom come; they apparently think that we do something on an experimental station which they could not do on their own land. That is why we have adopted the system of demonstrating improvements on the ryots' own lands.

10573. In this college, apart from sugarcane and cotton why do you not experiment upon oil-seeds or ground-nut?—We are doing that somewhere else. I have an experimental station devoted to ground-nut.

10574. And castor and gingelly and so on?—We have not done that yet. You must remember that this central farm is mainly for teaching and not experimental purposes.

10575. The study of oil-seeds is very useful for agricultural students?—We are not experimenting, we are teaching. As far as Coimbatore farm is concerned, we have a specimen of every crop in the Presidency as far as it can be grown here.

10576. For teaching purposes?—For teaching purposes, so that the student knows what each crop looks like.

10577. Could not Government scholarships be earmarked for different communities, including the depressed classes, in the different centres of the Presidency?—I have two scholarships for the depressed classes in this college.

10578. How many have you altogether?—Two for the depressed classes, one for Mohammedans, two for what we call poor and deserving students, of whatever community, and one for the best student of the first year class. He wins the scholarship for the next two years.

10579. For soil analysis have you got all the necessary equipment?—Yes.

10580. Do you take up any cases of soil analysis on behalf of private applicants?—Yes.

10581. Have there been any?—A good many.

10582. From different parts of the Presidency?—The ryot does not usually have his soil analysed. Most of the work comes from the planters. We charge a fee, of course.

10583. What is it; is it nominal?—No, it is Rs. 25.

10584. That depends on the soil?—It depends on the kind of analysis you want made. It costs more to make a chemical than a physical analysis.

10585. *Dewan Bahadur Raghavayya:* Is it not Rs. 5 for a *bonâ fide* ryot? —Yes, he gets a discount for the ordinary analysis. But if you want a full chemical and physical analysis it costs Rs. 25 and the *bonâ fide* ryot gets a concession, paying one-fifth of the fee only.

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10586. *The Raja of Parlakimedi:* For departmental employment do you not reserve all the best students available in the college?—When I give appointments I take the best, yes.

10587. But the percentage of the best is such that generally all the best students are taken up by the department. They are not available to private employers?—You mean to say that I am competing with the private employer?

10588. The number of men required for the department is so great that all the best men are taken up?—No. This January I have taken 40 students. I am not going to have 40 appointments next year. I may get 10 and I will be lucky if I get that. I should take the ten best, if that is the question you ask.

10589. Among the students there are different grades and the best are taken by the department?—Naturally I take the best I can get.

10590. *Mr. Calvert:* The best you can get on the pay?—Yes, on the pay.

10591. *The Raja of Parlakimedi:* For instance, if a private man requested you to lend the services of one of your best students on all the conditions enforced by the department, would you spare one?—No, I cannot. But I tell you what I would do and have done in a few cases. If you tell me that you are going to employ a man on your estate and you would take one of the best students, in the next examination in June I would let you have the best student willing to come to you before I began to take any at all, and I would promise you that if you are going to give him a good job I will tell him that I will not give him a Government post. I have done that in one or two cases but the students themselves regard it as a hardship that I should do it, I am afraid.

10592. *Professor Gangulee:* But has any landlord in this Presidency appointed one?—There are just one or two men who have been appointed.

10593. *The Raja of Parlakimedi:* Do you try to visit all parts of the Presidency yourself?—Yes, as far as possible, after attending to my administrative duties. I try to get out every month.

10594. Do you go as far as Ganjam?—I have been to Ganjam.

10595. How long ago?—Three years ago. I cannot get round the whole Presidency in one year. My administrative duties tie me very much.

10596. You think the area is very much larger than you can cover?—It is, if I have all the administrative duties to do. I cannot do both. The Director of Agriculture is loaded up with a tremendous lot of office work; he sits on committees and has a lot of administrative work. Anything that relieved me of that would be welcome.

10597. Would you not increase your Assistant Directors or Deputy Directors to do the work of gathering information as to what is wanted in different parts and so on? I believe that is the reason why you tour about now?—I visit the districts to see that the work is being properly done.

10598. And to gather information?—Yes; as I go round inspecting I also ascertain the requirements of a district. I go first of all to see that my departmental officers are doing their work and I try to meet as many people as possible, talk to them and find out what they want. I ought to be able to do a lot more touring, but office work keeps me very much tied to headquarters. Anything that would remove office work from me and let me tour I should welcome.

10599. *Mr. Calvert:* What would you suggest?—The only suggestion I have to make is a personal assistant of the standing of an officer of the Indian Civil Service to whom I might be allowed to delegate a lot of office work.

10600. *The Raja of Parlakimedi:* Do not you receive complaints from your Deputy Directors and Assistant Directors that they also cannot cope with the work because of the large area under them?—No, not so much on account of the area. They say that more and more office work is called for and there is too much office work. We now come under the pre-audit system; consequently there is a lot of additional correspondence about that, and they complain

that it takes too much of their time and they cannot travel as much as they would wish. I think the area is all right in most cases.

10601. Increased office work is the trouble?—Yes, it has a tendency to increase.

10602. So you feel that there should be supplementary appointments? Would you welcome supplementary men?—I would welcome myself a personal assistant of a higher grade than the present one. I would like an Indian Civil Service man who might take over a definite part of the office work.

10603. Does your department take full advantage of the information available at the revenue offices?—I hope so.

10604. When you go round you also make it a point if possible to meet the District Collector or the Sub-Collector?—Always. I always make it a duty to meet the Collector if I go to his headquarters or his camp and if possible to meet the Sub-Collectors.

10605. Is there a standing order for all grades of officers to meet their equals and so on?—There is no order on the subject, no.

10606. Is there a general understanding at least?—I cannot speak for other officers. Personally I always do it and I believe all the Directors of Agriculture have done it. I know my precedessor did it.

10607. Because you must admit that the revenue officials come more in contact with the ryots and they are bound to know their requirements?—I agree, and the revenue officials are very good. When I want information I go to them and I get it. I have no difficulty about that.

10608. Then on page 87, in answer to question 2, I take it that it is just a general statement when you say: "The big landholders here do not co-operate in the cause of agriculture and cultivation is always better in ryotwari areas"?—It is not a general remark; it is a statement of fact, I believe.

10609. Have you not come in contact with cases in certain zamindari areas where the zamindars are really carrying out very much better work than the work done in ryotwari tracts?—Very seldom; I know of very few cases.

10610. But there are cases?—There are cases, yes. There are always exceptions to every rule. In that sense it is a general remark. I see what you mean. I do not mean to say that there are no exceptions, but the exceptions are very few.

10611. If the department really co-operated with the landholders in meeting their necessities and complied with their requests, do you not think the exceptions would have been very much more numerous?—In what way?

10612. If you complied more freely with the requests of the landholders?—I never get a request which I do not comply with if I can. The trouble is that I do not get such requests. That is what I mean. Most of the landholders do not even live in their villages and how can I get in touch with them?

10613. There are many in this Presidency at least who do live in their villages?—Most of them do not. They are absentee landlords.

10614. I suppose it is different in different districts?—It is.

10615. As regards promoting co-operative sale of produce in villages, what is your opinion about making your demonstrators take up that work also?—The demonstrators have much more work than they can manage now and I do not think you can add co-operation to their duties; we have already a department for that.

10616. To teach the ryot the benefits of co-operation?—We do preach co-operation everywhere.

10617. What are the prospects of the best student of this college when he has obtained all the official qualifications possible?—In Government service?

10618. Yes?—His prospects begin with the post of an Agricultural Demonstrator or a Farm Manager of an estate or an Assistant on the research side.

10619. That is the highest he can reach?—That is the lowest he can start with.

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10620. What is the highest?—Director of Agriculture, I suppose.

10621. That requires foreign training, does it not?—There is nothing now under the present system that I can see to stop him from going to the top and becoming the Director of Agriculture.

10622. Even without going abroad?—I see nothing to stop him at present, if he is good enough and brilliant enough.

10623. *Professor Gangulee:* It is a question of efficiency?—He has got to pass the efficiency bar somewhere. The Imperial Service having now been converted into a Provincial Service, there is nothing between him and the top.

10624. *Rao Bahadur Muniswami Nayudu:* As regards organic manure potentialities, have you conducted experiments as regards the relative merits of cowdung manure and synthetic manure?—I do not know that definite results are available as yet, but what happened is that we tried each side by side.

10625. Do you think cowdung is the better manure?—Yes.

10626. In preference to the other?—Cattle manure, if properly made, is the best of all manures; if it is only village rubbish it is not particularly good and artificial manure may be better.

10627. What about penning sheep?—That is an excellent farming practice.

10628. Is it better than cowdung?—I will not say that.

10629. *Sir James MacKenna:* Is it not a fact that to-day the research which we have seen in the Research Institute is being done by Indians who were trained under Europeans?—Yes.

10630. And the specialist officers are Europeans?—Not all of them.

10631. Paddy is under a European?—Paddy is and cotton is, but sugar is not and millet is not.

10632. In any case the policy is that those who are to take up work independently ought to be sent either to England, America or Germany according to what work they are doing?—That is what I wish.

10633. Would you say that method of training is better and more desirable than other methods? Would you say that that method of training is desirable whether an Indian officer has been trained by a European or an Indian? —Yes, it is still necessary.

10634. As far as the training is concerned the present Indian staff has no complaint?—Certainly not.

10635. Is it not a fact that the best scientific workers at home are always anxious to have the benefit of foreign research, whether in Germany, America or elsewhere?—Certainly.

10636. So that sending students abroad is no reflexion on their capacity?—Certainly not.

10637. *Professor Gangulee:* May I refer once more to your work on soil survey? I think the Madras Presidency is the only Presidency which has carried out this work in several districts? Under whom was it carried out?—It was begun under Dr. Harrison. He was the first Agricultural Chemist. Dr. Norris followed him. Mr. Viswanath is the present Agricultural Chemist.

10638. You have surveyed five districts?—Five districts.

10639. It is a big area?—Yes.

10640. How long did it take?—We began the work in 1908.

10641. Can you give the Commission an idea of the cost involved?—No.

10642. You consider soil surveys are necessary for the proper guidance of cultivation in matters of farm practices?—Absolutely essential.

10643. Practically throughout India?—Yes; once it is done, it is done for ever.

10644. Did you undertake both mechanical and chemical analyses of soils? —Yes.

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10645. In view of phosphatic deficiency I should like to know the approximate quantity of phosphatic manure used in the Presidency. You give figures for one circle?—It is extremely difficult to get that figure. It is sold as bone and super and in other forms and a lot is sold to planters.

10646. On page 33 you say, "Dr. Hutchinson's work on the effect of sulphur bacteria on making phosphates soluble in composts was a fundamental problem and is capable of infinite development." There you raised the point that it was rather difficult for you because there was no organisation for following it up. What are the impediments under the existing system?—The point I wish to make is this. You have a piece of work like this done at Pusa. Dr. Hutchinson says: "This is a good thing; I wish all Provinces to take it up." But there is this difficulty: supposing the Director of Agriculture or the Agricultural Chemist does not agree or will not be worried with it, what is going to be done to persuade him to do it? Does the local Director sufficiently realise the importance of the thing as he would if he had a central organisation which was considered to be a body of experts to advise him? In such cases it would be advantageous for them to meet and discuss the matter; that is my point.

10647. The central advisory body would impress on the provincial officer the necessity of this work, if Dr. Hutchinson did not succeed in doing so himself?—That is my opinion.

10648. The central advisory board would convince the provincial worker: is that it?—That is my personal opinion.

10649. You would not invest the central body with any executive power, but merely with advisory power?—Merely advisory.

10650. Like your Board of Agriculture?—Yes.

10651. Turning to the question of seed distribution, am I right in concluding from your replies that there is no effective organisation outside the Agricultural Department for that purpose?—There is nothing.

10652. You had no response whatsoever from the co-operative societies?—That would be too sweeping a statement.

10653. You cannot rely too much on that source?—I cannot.

10654. With regard to demonstration and propaganda, the success hitherto obtained is not quite encouraging, that is to say, your efforts have not made much impression on the majority of Madras cultivators. Do I understand you aright?—I do not quite follow you.

10655. For seed distribution you agree there is nothing except your department?—Yes.

10656. With regard to demonstration and propaganda, I want to know whether I am right in thinking that your efforts have not made much impression on the ryot, on the man with six acres?—I do not agree. I think that is the very man we are getting hold of.

10657. What about the ryots with large holdings?—No, we are getting hold of men with small areas.

10658. The general impression I gather from your note in regard to agricultural education designed for rural areas is that you do not think that any significant progress will be made in the near future. Of the two schools that you started one succeeded. So that you do not present a happy picture in the matter of agricultural education in rural areas?—I am pessimistic about it.

10659. So the position is this: while on the research side you have certainly made distinct progress, the organisation for seed distribution, education, demonstration and propaganda is very deficient. Am I right?—Yes, exactly.

10660. In the case of research you feel the need of a central advisory body. Do you think that a similar body may be of some use in instituting better organisations for demonstration and propaganda and rural welfare work in

general?—I find it very difficult and I do not know whether any central body could help.

10661. You feel the need for a central body in respect of research?—That is a different body.

10662. I want to know whether there is any necessity for a central body for propaganda and education?—No, I can do my propaganda myself if I get sufficient men and money.

10663. What are your views as to the possibilities of utilising the local bodies created by the Local Self-Government Act such as the Local Unions, District Boards and so on? Do you look to these bodies as being of some assistance to your department?—Very little.

10664. You do not anticipate the time when these can be made very effective bodies?—Not for a very long time, if ever.

10665. As regards the question of the utilisation of cultivable fallow land, which was referred to by Sir Ganga Ram, do you not envisage a time when it will have to be faced?—Undoubtedly; but settlement on such lands should not be effected by giving students or labour colonies grants.

As for difficulties, I may quote here what a group of Danish peasants once told me: "God made the seas, we made the land."

10666. *Mr. Calvert:* Is there a separate faculty for agriculture in the University?—No faculty.

10667. Who draws up your curriculum?—We have what is known as a Board of Studies for Agriculture in the University. The Board of Studies for Agriculture in the University controls the curriculum.

10668. Who does the examinations?—The Board of Studies nominates the examiners.

10669. What is the composition of that Board?—Partly agricultural and partly non-agricultural.

10670. Is this Board of Studies appointed entirely from within the department?—No, outside people also.

10671. Is the majority from the department?—No, the minority. I am on it; the Lecturing Chemist Mr. Sivan is on it, and others from the department.

10672. Who is the Chairman?—The Chairman happens to be the Lecturing Chemist at the moment. The Board of Studies elects its own Chairman.

10673. Do you have external examiners?—Yes; we have two kinds of examiners, one internal and the other external. The internal man is only allowed to examine in the practical work; the theoretical papers are set by outside men.

10674. What do you mean by outside men?—We borrow from the Madras Presidency, Mysore and Travancore.

10675. The practical paper is set by the Lecturer?—Yes.

10676. Does the Lecturer see the draft paper set by the outsider?—No; it was the case at one time, but that has been stopped.

10677. *Dr. Hyder:* Have you not got a system of moderating papers?—There is a Board of Examiners, and they have to pass the examination papers.

10678. *Mr. Calvert:* Are you satisfied with the control of the examination?—Yes; I think it is well controlled.

10679. *Mr. Kamat:* To Sir Ganga Ram, you said that boring work in this Presidency was under the Director of Industries?—Yes.

10680. Have you an Agricultural Engineer?—Yes, we have.

10681. Does he not understand boring?—No.

10682. I think in Bombay the boring work is done by the Agricultural Engineer?—We had that system at one time; we found it did not work well, and we have transferred it back.

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10683. Who looks after improvements in the design of implements: is it the Agricultural Engineer?—At present that post is not filled; I am awaiting the appointment of a Research Engineer; at present we have not touched that problem.

10684. Have you any Indian firm manufacturing implements, like the Kirloskars who manufacture ploughs and sugar mills?—None very large; very small ones we have.

10685. As to the training of Indians, is it not a fact that instead of resenting it or feeling it a reflection on them, Indians are going to England and foreign countries for higher training?—Yes; I am glad to say many of them do.

10686. And you told us that it would take 30 or 40 years for them to fit themselves for higher posts such as that of Director of Agriculture; that is your estimate?—Yes.

10687. Is it correct for me to say that in the adjoining State of Mysore, all the higher posts in the Agricultural Department are held by trained Indians?—Yes, now.

10688. And with efficiency?—In my opinion, no; I would not say the Mysore Agricultural Department was efficient.

10689. What the Indians here aspire to is to speed up the process you have in mind?—Yes.

10690. *The Chairman:* I think you agree that silage may solve a very considerable part of the ryot's problem in relation to cattle?—Yes.

10691. How much silage have you in the pit at the dairy farm at this college now?—I am afraid I shall have to ask and find out.

10692. Do you know whether the making of silage is taught at Coimbatore?—Yes; it is taught at Coimbatore.

10693. Then I may take occasion to disabuse the mind of a witness, who has put in a note and will appear before the Commission, on that particular point. Do you think that the finished product of your college here lacks commercial experience when he leaves the college?—Undoubtedly; he has no commercial experience.

10694. If he has to go back to the farm, then it is a great handicap?—I agree.

10695. If he goes back to the farm, he must of necessity acquire commercial experience before he is on his farm very long?—Yes.

10696. But if he goes into the public service, he does not acquire such commercial experience?—No.

10697. Do you think that advice on technical matters from one who has no commercial experience would be as palatable to the ryot and is as likely to be accepted and followed by the ryot as would advice from one whose experience and knowledge are not merely technical but commercially practical as well?—No; the latter would be very much better.

10698. Have you ever considered the possibility of having a farm attached to the college on which the commercial side of farming would be taught?—No; we have not considered that.

10699. Would you recommend any such thing?—I should like it, but one difficulty would be that it would imply increasing the cost of the course to the student. Anything that implies increasing the actual cost of training should be ruled out, because the course will become too expensive for the students. I would rather like it to be post-graduate training; I would like to have a man after I had appointed him going in for such farming. Do I make myself clear? I was thinking of the large amount of increase in expenditure involved in the substitution of a four years' course for a three years' course. If we did that it would not be popular because it would increase the cost of education. If, on the other hand, after we have appointed a man to the service and he is being paid by the State for his job, we could give him more training on the lines you suggest, I would like that very much.

10700. You do place considerable emphasis on commercial knowledge for the officers of the department?—I do.

10701. You have not told the Commission, so far as I recollect, whether you have any travelling Demonstrators who are concerned with propaganda on some particular subject. Have you that system?—Do you mean travelling all over the Presidency?

10702. Yes?—No; they only travel round their local areas.

10703. Are you recruiting for the new Statutory Provincial Service as yet?—Not yet.

10704. When will you commence that?—At present we have no orders from Government as to Provincialisation. We are awaiting that.

10705. There is no part of your Service for which recruitment has been commenced?—No; we have got the double service, the Imperial Service and the Provincial Service.

10706. I am sure you understand my question as to whether you are recruiting for the new superior Provincial Service?—I do not quite understand what you mean by new Provincial Service.

10707. You have given the Commission an account of the charges and dues levied by the various elements in the marketing organisation from the cultivator onwards when he is marketing his cotton. I just want to be certain that in this Presidency the practice of insisting upon the free provision of a considerable sample by the cultivator is not insisted upon?—No; I have not come across that.

10708. Do you think agricultural shows are valuable; have they any effect upon agricultural practice?—I think they have a limited value in this country.

10709. Have you considered the possibility of insisting upon cultivators in a particular area growing some approved variety of cotton or other crop?—No, we have not done that.

10710. Do you know whether such experiments have been made in any part of India?—Not to my knowledge.

10711. You realise, I am sure, that it is impossible to obtain the full value for quality unless you have got a sufficient amount of the improved crop for which buyers are prepared to pay an extra price?—Yes.

10712. Have you ever considered the advisability of offering some specific reward to research workers for particularly successful lines of research?—I have heard the suggestion made, and I totally disapprove of it.

10713. You probably agree with me that if the combined resources of the State be applied to any one particular factor affecting the ryot's prosperity and welfare, such as, for instance, education, communications, or cultivation, a very considerable advance might be made. The obvious alternative method is to attempt a steady advance all along the line. Of those two methods which do you favour?—The latter.

10714. You would like to see a steady advance and progress all along the line?—Yes.

10715. I think you would like to give the Commission your opinion about recruitment in this Presidency for the new superior Provincial Agricultural Service?—I apologise for not understanding the question put to me earlier. The fault was entirely mine. The matter is in a preliminary stage in this Presidency. About six weeks ago I was asked by my Government in view of the situation to put up the necessary lists of those at present in the Provincial Services and of those remaining on the cadre of the old Imperial Service with the dates of their probable retirement and showing what our future requirements will be in regard to the cadre of the new superior Provincial Service, and also to indicate when the first changes due to retirements from the Imperial Service will begin to take place.

(The witness withdrew.)

Mr. Rudolph D. Anstead.

APPENDIX I.

Export of Bones, Horns, Oil-cakes and Oil-seeds from the Madras Presidency in 1925.

Country to which exported.	Bones.	Oil-cakes.				Oil-seeds.				Horns.
		Ground-nut.	Castor.	Gingelly.	Others.	Ground-nut.	Castor.	Gingelly.	Others.	
	Tons.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Ceylon	6,034	330,626	24,674	355,352	...	124	..	2,947	2,823	..
France	1,000	...	..	...	...	2,986,105	20,972	33,244	32,442	302
Belgium	428	...	...	...	...	209,657	16,375	.	703	6,254
Germany	30	31,280		355	22,579	965,840	...	8,356	10,636	5,632
United Kingdom	...	3,699	...	...	...	498,130	1,200	5	20,246	12,031
Netherlands	...	402	..	...	..	1,357,791	...	9,422	899	661
Italy	...	..	...	.	...	389,163	..	...	.	331
Straits Settlements and F. M. S.	. .	13,685	.	239	...	...	.	...	200	.
Spain	..	...	...	...	..	276,607	.		...	. .
United States of America	...	. .	...	...	...	...	419,390	...	200	
Java	...	8,486	...	...	...	...	...	...	...	...
Egypt	...	..	...	...	...	1,255,988	...	10	6,645	...
Other Countries	...	...	..	...	5	11,893	. .	13	...	...
TOTAL 1925	7,492	388,178	24,674	355,946	22,584	7,951.598	457,937	53,997	74,794	25,211
,, 1924	9,603	299,572	66,352	207,559	27,484	5,069,988	442,368	33,475	22,580	20,148
,, 1923	16,797	399,487	12,450	97,359	144,897	4,329,598	667,611	5,588	5,531	16,122

APPENDIX II.

Figures showing the benefits obtained from the application of manures in the Madras Presidency.

I.—Vizagapatam District.

Paddy.—Green manure and bonemeal.

The following results have been obtained on ryots' own land:—

Year	Area.	Cost of green manure.	Quantity of bonemeal used	Value of bonemeal.	Yield obtained.
	Acres.	Rs	Cwts.	Rs.	lbs.
1923 . . .	16	60	*nil*	...	37,228
1924 . . .	16	60	4	24	43,624
1925 . .	16	60	7	42	49,200

The yield from this land prior to the use of green leaf and bonemeal is not known, but judging from the adjacent lands, it must have been about 32,800 lbs. The increased profit produced by the manurial treatment is about Rs. 8 per acre.

II.—Guntur District.

Paddy.—Phosphatic manures by themselves and in conjunction with organic manures.

The following results have been obtained on ryots' own land:—

Year	Manure.	Yield per acre.		Value of manured crop.	Extra cost of cultivation and manures.	Net profit.
		Grain.	Straw.			
1926		lbs.	lbs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1	No manure . .	504	2,050	...	...	...
	3 cwts. super . .	2,352	2 500	75 0 0	19 15 0	55 1 0
2	No manure .	1,092	1,500	...	.	...
	2 cwts. bonemeal .	3,832	4,920	39 14 0	13 0 0	26 14 0
3	Green leaf . .	1,680	2,500	...	...	...
	Green leaf, 1 cwt. super.	2.184	2,500	19 8 0	6 11 0	12 13 0
4	10 cart-loads cattle manure.	2,000	3,000	...	..	...
	10 cart-loads cattle manure, 1½ cwts. bonemeal.	2,553	3,000	21 6 9	7 2 0	14 4 9
5	10 cart-loads cattle manure.	2,055	2,500	...	...	...
	One bag ground-nut cake, 1 cwt. bonemeal.	2,235	2,500	8 0 0	*nil*	8 0 0

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III.—Bellary District.

Paddy—Green manure, oil-cake, and bonemeal, with economic transplanting and an improved strain of paddy.

Strain	Manure.	Yield of grain per acre.	Extra cost.	Value of increased crop.	Net profit.
		lbs.	Rs. A. P.	Rs A. P.	Rs. A. P.
Local . .	Local and crop broadcasted.	2,520	.	.	.
G. E. B. 24 .	Improved . .	3,733	32 6 0	60 2 0	27 12 0
K. 18 . .	Do. . . .	3 538	32 6 0	59 9 0	27 3 0
Co. 1 . .	Do. .	2,400	23 4 0	35 8 0	12 4 0

Sugarcane.—Ammonium Sulphate and Superphosphate.

			Rs. A. P.	R . A. P	Rs. A. P.
1925	Local . . .	$173\frac{1}{3}$ maunds of jaggery.	...	...	.
	Ammonium sulphate aud superphosphate.	$216\frac{2}{3}$ maunds of jaggery.	...	...	119 2 8
1926	Local . . .	200 maunds of jaggery.	..	...	
	Ammonium sulphate and superphosphate.	280 maunds of jaggery.	32 0 0	192 0 0	160 0 0

IV.—Madras District (Chingleput).

Paddy.—Green leaf and bonemeal.

Year.	Manure.	Yield per acre.	Value of manured crops.	Extra cost of cultivation and manures	Net profit.
		lbs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1925	Green leaf and cattle manure.	2,812	.	...	...
	Green leaf, 2 cwts. bonemeal.	3,135	*nil* .	16 0 0	16 2 0

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V.—Trichinopoly District.

Paddy.—Phosphatic manures.

Year.	Manure	Yield per acre.	Value of manured crops.	Extra cost of cultivation and manures.	Net profit.
1	2	3	4	5	6
1925		lbs.	Rs. A. P.	Rs. A. P.	Rs. A P.
1	No manure . .	1,111	...	...	...
	Green leaf and bonemeal 84 lbs.	1,611	5 0 0	25 0 0	20 0 0
2	No manure . . .	900	...	...	...
	Green leaf and Trichi phosphate 80 lbs.	1,350	4 4 0	22 8 0	18 4 0
3	Cattle manure . . .	934		...	...
	Cattle manure, green leaf and 84 lbs. bonemeal.	1,458	3 2 7	26 3 2	23 0 7
4	Cattle manure.	1,575			..
	Cattle manure, green leaf, 84 lbs. bonemeal.	2,435	1 12 0	43 0 0	41 4 0
5	Neem cake . . .	844		...	...
	Neem cake and bonemeal 84 lbs.	1,709	3 4 0	43 4 0	40 0 0

VI.—West Coast District.

Coconuts.—General Manuring.

—	Cost of cultivation per tree.	Value of produce per tree.	Net increase per tree.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
No manure	0 1 9	0 2 9	0 1 0
Green leaf ashes and fish . . .	0 13 4	2 6 0	1 8 8

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VII.—The following is a typical result obtained in Experimental Station—Samalpota Experiment Station:—

Paddy.

—		Yield.		Value of extra yield.	Cost of manure.	Net profit per acre.
		Grain.	Straw.			
		lbs.	lbs.	Rs. A. P.	Rs. A. P.	Rs A. P.
Average 1924-25	No manure .	3,120	4,070	...	...	...
1925-26	. . .	2,068	2,440	..	...	..
Average 1924-25	Green leaf and bonemeal.	3,533	5,205	25 9 3	9 0 0	16 9 3
1925-26	. . .	2,295	3,370	15 4 8	9 0 0	6 4 8
Average 1924-25	Green leaf .	3,400	5,033	18 4 11	2 8 0	15 12 11
Average 1924-25	Fish . .	3,450	4,913	20 1 10	19 0 0	1 1 10

VIII.—The following result was obtained on the Lalgudi Co-operative Society Demonstration Farm with paddy:—

—	Cost of treatment.	Yield per acre.	Value of crop.	Extra profit.
	Rs. A. P.	lbs.	Rs. A. P.	Rs. A. P.
Phosphatic manure . . .	39 5 7	2,595	129 12 0	...
Local manure	48 4 1	2,118	105 14 5	32 12 1

Mr. Rudolph D. Anstead.

Rao Sahib M. R. RAMASWAMI SIVAN, B.A., D.I.P., A.G.R.I., I.A.S., Government Lecturing Chemist, Agricultural College, Coimbatore.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(a) So far as the Madras Presidency is concerned, Research work is fairly well organised, properly administered and sufficiently financed. The lines, however, along which improvements may be effected, are indicated below:—

(1) *Organised team work between different Experts.*—A greater co-ordination of workers on different subjects in the same Province is desirable. The Director has insisted on such co-ordination, and the circulation of the monthly reports goes some way towards making one expert know something of the work of another. All the same, one cannot help feeling that there might be more free interchange of ideas, instead of following the rigorous maxim, " each to mind his own business." No interference in one's work is suggested, but there are several points in which one expert can easily help another. Each attacks agricultural problems from a different standpoint, and it is suggested that one knows the view-points of another. If such watertight compartments should vanish, periodical informal gatherings of experts would be useful.

(2) *Greater co-ordination between Deputy Directors and the Experts.*—Similarly, there must be greater co-ordination between the District Agricultural officers and the Institute Research workers. A right move was made when, recently, a Deputy Director of Agriculture and the Agricultural Chemist, were deputed to collate field experiments, and reports on the methods of conducting experiments at the Government Agricultural Stations.

(3) *Co-ordination of work between similar Experts of different Provinces.*—In order that Chemists or Plant Breeders, say of one Province, may be conversant with the work of Chemists or Plant Breeders of another, it should be made possible for them to correspond frequently and without reserve. A scheme for achieving such an object is detailed in answer to question 4.

(4) *Continuity of Field Experiments.*—Experiments, especially field experiments, should be carefully planned—as a result of consultation between the Scientific Expert and the District Agricultural Officer. Experiments once started should be kept up until definite results, positive or negative, have been obtained. They should not be discontinued at the pleasure of a new officer. This view was strongly given expression to at the Sectional Meeting of Agricultural Chemists held at Pusa 5 years ago.

Several Farms were opened, apparently without much forethought and without definite policies, and closed down without any tangible results having been obtained. Instances are Bellary, Bantanahal, Sirvel, Bezwada and Anamalai.

(5) *Increased facilities for Study Leave for Studying in Foreign Countries.*—Beyond the provisions of study leave already in existence, it is desirable, that the deputation of officers for specialised courses, either in India or abroad, should be on the regular programme of the Department. Now that the Government of India and the Secretary of State have accepted the principle of Indianisation of higher services, it is essential that Indian Officers who have done some tangible work here, should have opportunities of learning in a larger field and having a wider outlook; otherwise, Indianisation might result, in the long run, in inferior work being turned out. The Indian state of Mysore, for instance, has been sending its young men to other countries, on some definite plan, for some years; and a certain sum of money is budgeted for such deputation. Our best men should be deputed similarly,

and they must be men of promise who will do good to the department and to the country, and not merely men who go to improve their prospects. When Indian officers are so deputed, it may also be a matter for consideration, whether, they may not be given a greater rate of allowance, on account of the increased cost of living for them in a foreign country, in addition to their having to maintain a family in India.

(6) *Minimum of Administrative work for Scientific Experts.*—While I realise that every Scientific Expert here is also the Head of an office, I would suggest that he should be relieved of a good portion of his administrative duties, so that he can devote more time to research work. This aspect of the question was seriously considered in Madras on several occasions, and various schemes were put up. The latest scheme was the appointment of a Director of the Research Institute at Coimbatore. The scheme aimed at a central office which will deal with correspondence, stores, accounts, returns, etc., and the Director would exercise a semi-control over the various Heads of offices located here. The proposal has not been accepted in its entirety, probably because the scheme was too costly, involved the waste of talent of a Senior Research man in non-technical office routine and interfered with the independence of Experts. What I suggest is this:—While each Expert should have complete control over his staff and also have a voice in the framing of his budget. all administrative details, like routine correspondence, periodical returns, stores, accounts, etc., may be safely left in the hands of an officer, well versed in office routine, say of the rank of a Superintendent of the Secretariat, or of an Accounts Officer of the Accountant General's office. This is not a costly scheme, and will greatly add to the efficiency of Scientific Experts; the output of scientific research would then increase in quantity and improve in quality. It is often disconcerting to see a distinguished scientist, wasting his time over files of paper which could be better dealt with by a non-technical man, instead of seeing him working in his laboratories with his sleeves tucked up.

Research workers who specialise in particular branches of learning must devote their lives to it. For the sake of an allowance of a sum of Rs. 150, Scientific Experts have had to relegate their research work, often times in the past, to their assistants and subordinates although, they were drawing their main salaries as experts. Whenever, by reason of seniority, an Expert becomes eligible for an allowance, it is more economical to give him the benefit of the allowance than take him away from his legitimate work.

(7) *Training of Staff.*—It must be the first duty of the Head of each Research section to train one or more of his senior assistants to take up his work at a moment's notice. The training of fresh men should also be on well-defined carefully thought-out lines. A spirit of comradeship should be created amongst the staff of each section, irrespective of pay or grade, consistent with discipline. There should also be a gradual transference of responsible work involving initiative and designing, reference to, and abstracting from, literature and drafting of reports, to the more intelligent of the staff.

(8) *Routine and Research.*—In every Scientific section, the work may be roughly classified into two classes—one which requires considerable knowledge, original thinking and initiative, and the other consisting of routine. Those who show aptitude for research work should be encouraged in every way, for example, submission of a thesis for a higher degree, while those who are not up to the mark in a Research section should be transferred to the Executive or other lines where they may find more congenial work.

(9) *Provision for Post-Graduate Study of Agricultural Graduates.*—I know that Pusa affords provision for the admission into each section of a few students coming from all India. At the same time, most laboratories in the Provinces are so well equipped and adequately staffed that each scientific section can take at least two post graduate students for research work every

*R. S. M. R. Ramaswami Sivan.

year. There has been some demand for this in the past and it is best that each Province is self-contained as far as possible. All that is required is a Government Order, formally sanctioning the admission of advanced students for post-graduate study.

(10) *Provision of Facilities for Work by Retired Officers.*—One of the main reasons advanced in the past before the Public Services Commissions for Indianisation was that the knowledge of these officers would remain in the country even after their retirement. When an officer completes his 55th year, he automatically retires. He may, in his spare moments, wish to continue his work after retirement, and it is also possible that the Head of the department or Government may give the sanction in special cases. What I wish to urge is, that a provision should be made for the purpose. These retired officers, with their vast experience and knowledge, would be honorary workers and would probably give honorary services to the department. In other countries, these retired scientists would, I believe, be recognised as Emeritus Professors and would have ready access to their old places of work.

(11) *Increased Recruitment of Agricultural Graduates into the Science Sections.*—There has been a tendency in recent years to draft fresh science graduates—not all Honours men—into the Research sections, to the exclusion of Agricultural graduates. This may be partly due to the paucity of hands to fill the Agricultural section but, with the larger number of Agricultural Graduates who will be turned out in future from the Agricultural College, the recruitment of graduates in general sciences in Research sections of the Agricultural Department might be discouraged. It is not pure science that matters, but it is the application of science to agriculture, and it is self-evident that, as a B. Sc. Ag. has learnt his sciences in their application to agriculture, he should be considered more useful for purposes of Agricultural Research. The ordinary science graduates have the whole world before them, while the Agricultural men have only the Agricultural Department to look forward to.

(*a*) (*i*) As regards research into the scientific value of the indigenous theory and traditional methods of agriculture, it may be said that there are no indigenous theories, so to speak, but there is plenty of local tradition.

This tradition is built up into a large number of proverbs, known all over the country. There are proverbs for foretelling weather, for preparing the land for different crops and for sowing, planting, irrigating, harvesting, etc. Some of them may appear to be based on astrological data, but are mostly derived from astronomical calculations and cannot be lightly set aside. Some compilations have been made of these proverbs, but the subject is not exhausted.

On the general principle that agricultural enquiry, experiment and demonstration must take place in chronological order, enquiries have been made for nearly 50 years in the Madras Presidency. Some of these, but not all, have been incorporated in bulletins, but there must be lots more which are buried in official reports and files. Much of the information was the personal knowledge of individual officers and, with the death or retirement of these officers, the knowledge is lost. The result is that every new officer begins to make his own local enquiries once again and he often thinks that he has learnt something new. It is desirable that these results of local enquiries—each of which by itself may seem to be an insignificant fact—should be codified and made available for the succeeding generation. If each Circle deputes a Senior Agricultural Demonstrator for the purpose for a time, he will be able to go through the old files, and probably also the Demonstrators' weekly diaries and submit memoranda sufficient for one bulky volume. The work done by the late Rao Bahadur C. K. Subba Rao and the information gathered by Messrs. C. Benson and Rao Bahadur J. Chelvaranga Raju, for instance, will certainly be worth collecting and preserving.

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(b) The Legislative Council has been fairly liberal towards sanctioning budget grants for the Agricultural Department, and a moiety of grant was made available last year from the contribution of the Government of India to Local Government in Provincial Settlement. There is generally no lack of field or laboratory facilities. Shortness of staff may be partly responsible for the expansion being not so rapid as one might wish. In Research work, however, it is better to have a sure ground and proceed carefully, step by step, rather than take up too many unmanageable problems, none of which could be solved thoroughly. Thoroughness, accuracy and truth are the essentials for research work, and a wrong step will put back progress. Researches are not made to order, and a reasonable amount of time is required for arriving at results, and it must also be mentioned that, after all, an experiment may succeed or fail; and any attempt by Government or Legislature to hurry results will lead to haphazard unreliable work, most detrimental to progress.

(c) In a country often subject to precarious rainfall, the system of Dry Farming requires much more serious study. For instance, the rationale of the growing of chillies and tobacco without irrigation which is perfectly well understood by the Guntur ryots can be investigated into, with a view to its introduction into other similar tracts. In the Tamil districts, these crops are always grown as irrigated garden crops.

It is believed that bare fallowing after paddy, with partial dry digging, benefits the land, while growing a green manure crop after irrigating the land is said to spoil it, in Tanjore. Is the belief correct?

The whole purport of this long answer to this question is this:—The improvement of agriculture depends mainly, and finally, on research. The man engaged in research irrespective of his pay or grade, should be charged with the spirit of research and give his entire time to his legitimate work, untrammed by specified office hours. That is why he is provided with quarters close to his laboratory. The spirit should not be "This is enough for the wages I receive," on the other hand, it should be "Is this all that I can do and am capable of doing?". Not until such a spirit prevails over each Research section and over the individual members of each section, can one say that the maximum output of work has been turned out, in return for the money paid by the tax-payer who is, after all, the agriculturist.

Question 2.—Agricultural Education.—My experience of agricultural education extends from 1889, when I joined the Agricultural College at Saidapet as a student. I have also a general knowledge of the institution from its foundation in 1876. I have, in addition, been connected with the Agricultural College at Coimbatore as Chief Assistant to the Agricultural Chemist, as officiating Agricultural Chemist and latterly as Lecturing Chemist, engaged mostly in teaching and with a fair amount of research work to my credit. I have a fairly good knowledge of the working of arts, science and professional colleges in the Presidency and am also fairly conversant with University matters. I am, therefore, submitting a separate short "Review* of the Progress of Agricultural Education in South India" which, I thought, may be of some use to the Royal Commission.

My long connection with the department, especially in teaching, makes me suggest the following changes in the recruitment of staff and method of instruction adopted at Coimbatore.

(1) Officers are specially selected for their teaching abilities, and even given an extra allowance for teaching, in most professional institutions like the Forest, Medical and Engineering Colleges, and I take it that the teaching staff of the Agricultural College is good. All the same there is a general feeling prevalent that Teaching sections are inferior to Research sections. I do not underrate the importance of research. Far from it. To my mind, teaching

* Not printed.

has not received the same amount of attention at the hands of Government, as the Research Sections. On the other hand, the very best men must be drafted into the Teaching Sections, because it is the students trained at the college who generally form the staff of the Research and Executive branches of the service in future.

(2) It is only in Madras, and all within the last 5 or 6 years, that the idea of putting a non-teaching man as Principal, has been adopted, all for the sake of an allowance of Rs. 150. A Mycologist, a Paddy Specialist, a Cotton Specialist draws his pay as a Scientific Expert, relegates scientific work to subordinates, and devotes a considerable portion of his time to routine administrative details. Even as a Principal, he does no teaching, and probably knows little about the students and what they learn. He has no control whatever over the teaching of different subjects, because the staff who teach these different subjects are each subordinate to different independent experts. Doing neither his own legitimate research work nor any kind of teaching, the Principal mainly does the duties of assignment of quarters, repairs to roads and buildings, general sanitation, etc. The Principals of the Medical, Engineering and the Presidency Colleges, for instance, have also administrative duties to perform, but they take up the responsibility as well for the teaching of some subjects.

Again, the Principals of the Agricultural Colleges in Madras in the past, and in the other Provinces at present, have administrative work, but still they are engaged in regular teaching as well. The present move to appoint a senior research officer as full-time administrative Principal, is not likely to solve problem, unless and until he is to do some teaching work as well. Not until one of the senior regular Professor of the College is Principal will teaching receive the attention which it should.

(3) Instead of the teachers in the different subjects being under the control of the different experts, all the teaching staff, including the officers of the Indian Agricultural Service, should be directly under the control of the Principal, who must have not only administrative capacity, but also a wide knowledge and outlook, with ability to supervise the nature of teaching imparted in different subjects.

(4) One more point, and that is to provide for periodical transfers of staff from the Teaching to Research sections and *vice versa* and also careful drafting of agricultural officers from the districts to the college staff, with a view to infuse fresh blood. Only then there will be a real feeling that all the officers of the department form one group, instead of the present water-tight compartments, namely, Teaching, Research and Executive branches. Far from the Teaching section being considered the *pariah* portion of the service, it should be considered the most important.

(*i*) For the present, the College at Coimbatore is sufficient; but with the development of new University areas, it is desirable that each University should have at least one agricultural college. The number of teachers at the Agricultural College, Coimbatore, is sufficient but more Demonstrators are needed for practical agriculture.

The students of the Agricultural College need further training in the economic side of farming. Apart from instruction in the general principles of Economics, the subjects of agricultural economics, marketing of farm produce, agricultural co-operation and farm accounts need special attention for successful framing. For advanced courses of a post-graduate nature, there is also need for a whole-time officer, and the creation of a chair for Agricultural Economics is necessary.

(*ii*) My recent experience in the Madras University was that the members of the Senate and of the Academic Council were anxious to add, to the Intermediate Courses in Arts, Technological studies of which agriculture was one. A syllabus was submitted by the Board of Studies in Agriculture and has been accepted. In my opinion, it is desirable and even essential, to

encourage the teaching of Agriculture as an adjunct to Arts and Science courses throughout the Presidency. The students, who take up agriculture in their Intermediate and High School courses, are not expected to become agricultural experts, but there is no doubt whatever, that they will acquire an agricultural bias, and that is a very great thing indeed, in the present educational system which is purely of a literary character (*vide* also answer to question 23 on General Education).

(*ii*) It is desirable that teachers in rural schools have an agricultural bias, but it is not always possible to get them. To my mind, the term "Agricultural Classes" covers a wide range. It may mean those who own large estates and extensive lands or those who own small holdings, or it may mean tenants or agricultural labourers. The last class is not generally educated enough to provide teachers. The first class consists of rich men who would not care to take up teachers' posts in rural areas, even if they are educated. The choice of teachers will, therefore, be from people with small holdings and from tenant farmers.

It may be stated, however, that, if farming will pay, even these classes will not care to accept poorly-paid teachers' posts in rural schools. At the same time, it is not to be supposed that there is a large class of people who are not, in one way or other, connected with land in the country. The real trouble is, the general disinclination to manual labour.

(*iv*) There has been an increase of admission into the Agricultural College, Coimbatore, from 20 to a maximum of 40, this year. The college has been built with lecture rooms and laboratories which, with a slight modification in the time table, could easily admit twice the number. There is a selection out of a large number of applicants. There is also a peculiar rule, obtaining only in this Presidency, whereby students of Indian States (comprised, after all, within the Presidency) have to pay annually an extraordinarily large sum of Rs. 1,200 as college fees, while all students from British districts are admitted free, with the result that such students go in large numbers to Poona or Nagpur. The large number of applications indicates that there is a demand. Why not admit more? The only additional expenditure would be a few more Demonstrators for the laboratories and agricultural field classes and a better provision for teaching practical agriculture. Even as it is, the provision for practical agriculture is inadequate, rather, not well-organised. The Central Farm must essentially be a College Farm—students' practical work taking precedence and financial considerations only of secondary importance—and must serve the same purposes for the teaching of Agriculture, as a laboratory is essenital for the teaching of Chemistry.

Due to the transfer of the Cows' section of the Farm to the Deputy Director of Livestock who has his headquarters at Hosur, there is not that touch, which the agricultural staff at the College should have with the College Dairy, with the result that the training in Dairying stands in need of great improvement. With the very limited equipment of Dairy appliances, a student does not, working by turns, get dairy practice more than three or four times during his whole course.

(*v*) The main incentive at present is to enter service in the Agricultural Department. There are a few who join with the object of going back to the land.

(*vi*) The pupils are generally drawn from the agricultural classes.

(*vii*) *Vide* also answer to (*iv*).

The great difficulty of finding field work of various kinds for all the students of three classes, has to be solved. A great increase in the present equipment is first essential, both in cattle and in implements. Another alternative is also worth consideration, which seems to be in vogue in other countries, namely, to make a student work in some recognised farm for a specified period of time. It would appear that, in some cases, a farmer's certificate given to a student seems to indicate sufficient practical training

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for purposes of admission to an Agricultural College. Such a system may not be possible until we have home farms, and farmers who can be expected to guide students and certify to their efficiency in practical agriculture; but, there are a number of Agricultural Stations which are scattered throughout the country. Students coming from different districts may be asked to spend a specified period, say 3 months, in one of the Farms near their native places, where they should be made to do mechanical field operations, for at least 3 hours daily.

Another alternative is, that students are sent, during portions of the college vacations, to specified Government Agricultural Stations to undergo Farm training, including the handling of implements and by changing the farm during the different vacations, they may acquire varied information as well. This duty of training students requires a little experience on the part of the agricultural staff of these farms and most farm managers can do this work efficiently. It will relieve the necessity of teaching the elements of practical farming, the use of implements, tools, etc., in the Central Farm. The practical agriculture which may be done at Coimbatore should partly be manual work, for instance, cultivating their own plots and partly, the preparation of Agricultural Reports—which was a distinct feature of instruction at Saidapet. This last work requires good guidance at the hands of teachers, and it is worth while considering. The details, however, have to be worked out carefully, at a Conference of the college staff and the Deputy Directors.

The instruction that is given in different applied sciences is mainly practical, as it should be. It is more or less thorough, and I would not like any lessening in sciences. The time devoted to agriculture is one-third of the time table, all the other six subjects getting two-thirds; and if agriculture is properly taught, I do not think that any modification is necessary.

Agriculture is a business. Training at a college does not involve the teaching of business transactions. It is a matter for consideration whether B. Sc. Ag's. may not suitably be given an additional year's practical training, under the immediate charge of the Deputy Directors, the students being given a subsistence allowance of, say Rs. 50, during their period of training. Such graduates, as show an aptitude for particular sciences, may be selected for training in the Research sections at the College. This system is similar to the training of Civil and Mechanical Engineer students in works and workshops, and of medical graduates as House Surgeons. Such additional training will give confidence to the students themselves, and to the employers as well, and there will also be a tendency for the more hopeful of the students to take to private farming.

There have always been two opinions on the question whether Teaching and Research should form one section or whether Teaching should form a separate section from Research. In my opinion, the advantages are in favour of the latter, especially if provision be made for the delivery of a certain number of special lectures by Research officers on the progress of research work in each section. Such lectures have been given occasionally, as a mater of courtesy, on the request of the Heads of Teaching sections, by some Research officers hitherto, but it is desirable that these special lectures are organised by the College Board, in consultation with the Director of Agriculture, and find a place on the regular time table.

It is also desirable that the designation of the Teaching staff at the Agricultural College, Coimbatore, is changed to the ordinary nomenclature adopted in all educational institutions, *e.g.*, Professors, Lecturers, Assistant Professors and Demonstrators.

(viii) *(a)* There has recently been much improvement in elementary schools on the subject of nature study, but the powers of observation of the teachers themselves are, in my opinion, not yet of sufficient standard. This is referred to in answer to question 23—General Education.

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(*viii*) (*b*) School plots are excellent ideas, but very poorly organised. It would appear that the scheme of school gardens has received enormous attention in Ceylon, and a system of prizes exists, for gardens maintained by individual pupils as well as by the schools as a whole.

(*viii*) (*c*) There are no school farms as such, as there are no agricultural schools except those attached to Government farms; but, when Agriculture begun to be taught in the University Intermediate classes and also in high schools, school farms should develop on proper lines. No school or college will be officially recognised by Government or the University to teach agriculture, unless ample facilities are provided for teaching practical agriculture.

(*ix*) So far most of the students who have passed from the Agricultural College have entered service in the Agricultural Department. In the earlier years, they were absorbed in the Revenue, Settlement and Veterinary Departments and also in Minor Irrigation Works. Within recent years, the idea of drafting agricultural men into the Co-operative Department was boomed, and advertisements calling for applications, particularly from agricultural graduates, were widely published; but not even one man has been taken into this allied department.

Some of the reasons why agricultural students have not taken largely to private farming may be mentioned. These are:—

1. They have found berths ready for them so far in the Agricultural Department; but there is a limit to such recruitment.
2. Most students have not sufficient landed property which will bring them such profit as a result of agricultural improvements they may effect on their lands as will be equal to the present income from those lands *plus* the salaries of their appointments.
3. Some of them are not sufficiently confident of their own capacity to make farming profitable in the face of the uncertain nature of the Indian monsoons. The practical training suggested above under the last paragraph of my answer to question 2 (*vii*), should largely rectify this diffidence.
4. Absence of facilities and resources for private farming can be rectified by a preferential assignment to agricultural students, of deforested and other culturable waste lands, on favourable terms, supplemented by a system of advances for initial outlay. I understood that such a system has recently been introduced in the Punjab and Travancore.

(*x*) Economic stress will lead them to appreciate the dignity of manual labour, which is the first step to their taking to practical farming. It may be mentioned that most of the students have been drawn from the middle classes.

(*xi*) There is no provision for advanced study of agricultural students at present and it is very desirable that there should be scope for post-graduate courses for these students; and, as far as possible, each Province should make provision for such study.

(*xii*) and (*xiii*) This is largely the work of Local Boards and Social Service organisations. Some work in this line has been done on a very small scale in the Coimbatore district. The labourers, for whom these schools are meant, are tired after their daily work and have no inclination to attend a regularly conducted class. There is demand, however, amongst a good number of these adults in rural tracts for acquiring some knowledge. A few libraries of vernacular books have been started in half a dozen villages last year by the Coimbatore District Educational Council, and newspapers are sometimes read to those who care to gather, vernacular lectures on lantern slides are generally appreciated, whatever the subject may be.—Agriculture, Co-operation or Rural Hygiene.

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QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—The success of demonstration and propaganda depends largely, if not solely, upon personality. Accustomed as villagers have been in the past to the tax-collecting Revenue Department and the awe-inspiring Police, Excise and similar departments, it has taken some time for them to realise that the Government can be so altruistic as to organise an Agricultural Department whose sole object is to make them more prosperous. The frequent visits of Agricultural Demonstrators and the distribution of villagers' calendars have largely popularised the Agricultural Department, and there are even villagers who look forward to the next visit of the agricultural officer. Propagandist work has to be done in a missionary spirit and, as long as agricultural officers talk the language of the ryots, move with them intimately, take interest in their little concerns and, in fact, enter into the spirit of the life of each village, to that extent, the work of the department will be popular. When, on the other hand, an officer halts most of his time in a dak bungalow and is satisfied with inspecting a field here and a field there as may be shown to him by the local agricultural demonstrator, or is merely satisfied with the checking of stores and manure depots, he will not be a success.

(*b*) The Demonstrators as a class are doing their work well, but it is desirable that there is more concentration of work in particular localities. It is not merely enough to tell a ryot to do this and to do that, but it is essential that the Demonstrator should remain long enough in the village and see it done, himself taking off his coat and joining in the labour.

It may be pointed out that the amount of travelling allowance paid to agricultural subordinates is not sufficient to meet their expenses, and the budget grants to the Deputy Directors' Circles will have to be increased. The rules may have also to be modified, so that subordinate officers may not be out of pocket when they go out on tour.

More Demonstrators are wanted, and arrangements may also be made for training a much larger number of demonstration coolies. Intelligent field labourers from neighbouring villages may be induced, by the payment of increased wages—they may be called village stipends—to work for a month or two in the nearest Agricultural Station, to observe and learn the improved methods adopted therein.

(*c*) If the methods suggested by agricultural officers are suitable, the ryot does not require any inducement to adopt expert advice. It is not always the case that an improved method will bring him a return which will cover the expenses, and a ryot is shrewd enough to ask whether it will pay. For example, the application of a manure mixture suggested by me has brought in an average increase of 10 per cent. in the yield of paddy grain which, for a scientific worker, may be considered a satisfactory result. 10 per cent. increase, however, on a yield of 3,000 lbs. amounts to 300 lbs., while a similar increase on a yield of 1,500 lbs. is only 150 lbs. of grain. The former pays the cost of the manure, the latter does not.

Subject to this general proviso, the ryot is not averse to change his practices. It has to be remembered that he has as often something himself, to enlighten the Agricultural Demonstrator with.

Since the establishment of the Agricultural Departments on their present basis various devices have been adopted with the view of making the ryot take interest in the work of the department, with varied degrees of success. Some of these may be mentioned:—

(1) One of the most effective methods for popularising agricultural improved methods is, in my opinion, the constitution of Advisory Boards in typical localities, consisting of officials and non-officials belonging to the agricultural classes. These advisory bodies have been found useful in some Provinces, in Ceylon and in the Indian State of Mysore but, for some reason or

other, the Madras Agricultural Department has fought shy of this kind of association with the ryots. The Mysore Agricultural and Experimental Union is a noteworthy example of the possibilities of co-operation between the ryots and agricultural officers.

(2) The Legislative Council elects an Agricultural Advisory Committee. I do not know what the functions of the Committee may be, but I know that very few members of the Committee have cared to visit an Agricultural Station or see the work which is being carried on at Coimbatore.

(3) The system of Honorary Visitors to the Agricultural College, Coimbatore, was introduced more than a decade ago. In the beginning, a small percentage of these visitors came to the college and wrote some remarks in the visitors' book, but the honorary visitors have now practically ceased to come. Most honorary visitors never made even one visit during their tenure of office. The system of honorary visitors seems commendable, but the right sort of men should be appointed by Government, and probably more facilities afforded to them to do the visiting.

(4) It is also desirable that a system of an organised, annual visit to the college by the members of the Legislative Council, on the invitation of the Minister, should be arranged, somewhat similar to the annual visit of the Rothamstead Experimental Station by the Members of Parliament headed by the Cabinet Minister for Agriculture. Most members of the Legislative Council have considerable interest in land and, apart from their being benefited personally, they will give a sympathetic consideration to agricultural questions which may come up before the Council, when they actually find that the work of the Agricultural Department is not an eye-wash.

(5) Visits of actual cultivators to the Agricultural Stations have been arranged from time to time and it is desirable that there are more frequent visits. I would even suggest that the Government make a small provision to meet the charges incurred in looking after the comforts of these guests when they come to visit the Agricultural Stations.

(6) To my mind, the department is not sufficiently advertised. It is generally the middle class cultivator who speedily adopts improved methods. At the same time, it is essential that the indifference of the richer, and generally the more educated, landed classes should soon change into active participation in the activities of the Agricultural Department. They have local influence and plenty of resources, and can afford to effect improvements both in their own interests and for the benefit of their tenants. They will have to change a life of comparative ease to one of ceaseless effort.

(7) The activities of the department have been largely restricted to ryotwari villages, and the permanently settled zamindary tracts are mostly untouched. It is desirable that zamindars evince more interest in their agricultural problems than they have done so far.

(*d*) The following instances of success in propaganda and demonstration work are given:—

(*i*) The introduction of the seed drill in Tinnevelly and ploughs of improved pattern all over the country.

(*ii*) Adoption of a lower seed rate and the economic transplantation of paddy.

(*iii*) The practice of growing green manure crops.

(*iv*) Extension of areas adopting the application of indigenous manures like bonemeal, oil-cakes and fish guano and of fertilisers like ammonium sulphate and super-phosphate.

(*v*) Introduction of improved seed strains of paddy.

(*vi*) General improvement in cotton cultivation.

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(*vii*) General improvement in sugarcane cultivation and jaggery making.

(*viii*) Use of spraying machines to combat crop pests, both insects and fungi.

All the above are due to the activities of the officers of the Agricultural Department. Much more work has yet to be done, but the problems have so far been tackled with care. More staff is essential.

Failures:—

One cannot say that the ryot has yet adopted a better preservation of cattle manure.

QUESTION 4.—ADMINISTRATION.—(*a*) The present Board of Agriculture has more or less outlived its usefulness, and the Central Board of Agriculture suggested by Dr. Clouston which would consist of Administrators, Ministers and Experts, would be most unwieldy and, in my humble opinion, would not do much useful business, even of an advisory character.

The idea of a small Central Board consisting of 3 to 5 members, somewhat similar to the Railway Board, has been suggested. It has a few good points. When provincial autonomy has been granted to Provinces, this Central Board could at best only give advice, and probably high salaries will have to be paid to the members constituting the Board.

Except that some of the Experts had, immediately on their arrival 20 years ago, some months' training at Pusa, there was practically no allegiance of the Provinces to Pusa nor did the Provinces get much benefit from the Central Government all these years, even when Agriculture was not a Transferred subject.

The idea of a Central Board of Agriculture offering advice to Local Governments, whether the Ministers in the Provinces want the advice or not, will not be acceptable to the legislatures of the country. It would be argued that, starting as an advisory body, the Central Board may come to assume statutory powers. So far as the administration of Transferred subjects in the Provinces is concerned, the very fundamental principle is that these Ministers must learn the art of administration and, during that period, they may make mistakes, and it is better that they profit by their own mistakes rather than being counselled by an outside authority.

There are a few questions of international concern in which the Central Government may take the initiative, *e.g.*, crop protection from outside infection, Customs and Railway freight on agricultural goods, etc. In some cases, as for instance, with regard to the International Institute of Rome, it is quite possible that each Province may seek to have its own representation.

(*b*) The object aimed at cannot be achieved by increasing the scientific staff of the Government of India. Great benefits will accrue, however, by pooling the services of scientific officers, and one of the methods in which this can be done is as follows and is somewhat on the lines followed by the United States of America. Each State in the Union has, for instance, its own staff of Chemists and enjoys autonomy with full scope for tackling its own problems. At the same time, there is a permanent organisation called the Association of Agricultural Chemists, which periodically meets and publishes what are termed Official Methods recognised all the world over.

There may be one Chemist in a Province in India and, while the problems pertaining to his Province have to be solved by himself, on his own initiative or conjointly with the Deputy Directors, it must be recognised that he has much to learn from the Agricultural Chemists of other Provinces. However clever he may be, as long as he does not come occasionally in contact with similar workers in other fields, he will run in his own narrow groove and develop a spirit of self-sufficiency which is detrimental to progress. Until now, such a stagnation was partly rectified by the opportunity which officers had of meeting their co-workers at meetings of the Board and Sectional Conferences, or in the case of European Officers, by coming into contact with workers on similar subjects whenever they go home on leave.

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Now that provincial autonomy has been granted and the services are to be Indianised, it seems necessary to make some provision of a permanent nature whereby the Provincial Scientific Experts will be able to know what their co-workers are doing in other Provinces. What I have said above about Agricultural Chemistry applies equally to other branches of research. A tentative scheme for the co-ordination of these research workers is suggested below:—

I. There shall be a number of Sectional Associations which shall be permanently constituted for the following branches of Agricultural Research, as a beginning:—

1. Chemists, Soil Physicists and Bacteriologists.
2. Botanists and Plant Breeders.
3. Mycologists.
4. Entomologists.
5. Livestock Experts, and
6. Agricultural Engineers.

II. All officers of the Indian Agricultural Service, officers holding posts similar to the Indian Agricultural Service but outside that cadre, whether appointed in India or by the Secretary of State, on short term contract or on long-term, and officers of similar standing in Indian States, shall be *ipso facto* members of the Association.

III. Each Association shall elect one of their members to be the Secretary who shall be the convener and co-ordinating officer. He need not necessarily be attached to the Central Government.

IV. The duties of these Boards shall include the following:—

(*a*) To encourage co-ordinate work in each subject, consistent with local conditions, as far as possible.

(*b*) To consider and scrutinise the programmes of experts and offer suggestions.

(In the earlier years the consideration of the programmes of the Experts in the Provinces formed an important item on the agenda of the Board. It was dropped after sometime, apparently because the somewhat heterogenous body of the Board did not feel justified in scrutinising the work of particular scientists. One need not fight shy or feel delicate over the matter of submitting programmes to a Council of Experts, and there need be no fear of interference. What is aimed at is team work, giving help to, and obtaining help from, others. There is no one after all who cannot learn something from his co-workers.)

(*c*) To give prominence to research work which will lead to results of economic importance, in preference to pure academic work.

(*d*) To arrange for team work in specialised lines of study in different Provinces and evolve official methods of experimenting, by appointing referees, the work being done in a concerted manner, avoiding at the same time, unnecessary duplication and overlapping.

(*e*) To appoint referees for assessing research work submitted for publication.

(*f*) To consider subjects as may be referred to them, from time to time, from Central or Provincial Governments.

(*g*) To organise periodical conferences.

(As regards periodical conferences, those who have attended the two or three Sectional Conferences will testify to the fact that they learnt from co-workers more at these Conferences than at Board Meetings, more in informal talks than at these formally convened meetings, and more in that one week by personal touch than could be learnt by any amount of correspondence. The question of expense by way of travelling allowances will always crop up, but

if the highly paid scientific experts have to be kept up to date, the expense must be provided for. If the Conference of special Boards be convened at the same place and about the same time as when the Indian Science Congress holds its sittings, there may be a saving of expense to a certain extent, because several officers of the department are deputed to attend the Science Congress every year. This deputation has to be encouraged because, apart from their reading papers at the Conference, it does them—experts in applied sciences—a lot of good to come into occasional contact with experts in pure science.)

QUESTION 5.—FINANCE.—(a) One of the methods of financing provision for short-term credit to cultivators, which may be suggested, is the one similar to what is adopted by some manure firms to help the planter. The method consists in an agent of the firm making an estimate of the probable next year's outturn of crop of a coffee or a tea estate and making an advance to the planter to the extent of the value of that crop. The advance may be in the form of manures, tools and sometimes cash. The crop is pledged to the manure firm, and, as soon as the harvest is over, the firm either purchases the crop or sells it in the open market, with the knowledge and approval of the planter, at the proper time.

To work a similar credit system for the benefit of the large ryot population will be a fairly big concern, but, with the help of properly organised village panchayats and co-operative credit societies, this is possible. To be able to advance the planters, the firms get necessary funds by overdrafts from recognised Banks. These panchayats and co-operative societies should be directly financed by a system of State Aid to Agriculture—somewhat similar to the State Aid to industries, recently introduced in Madras,—the panchayats and societies being held responsible and invested with the necessary powers for the granting of advances to the cultivators on the security of standing crops and their recovery and subsequent payment to Government.

The produce may also be stocked by these societies and sold at opportune moments getting the maximum advantage to the ryot, obviating the necessity for his being obliged to sell it on the threshing floor and therefore getting minimum value for his produce.

Advances for long-term credit could be managed only by special societies, well financed and with proper safeguards of securities of immovable property.

(b) The rules which govern the system of *taccavi*, from the period of application for loan, through the different stages of local enquiry by different sets of officers, the sanction of the grant and the actual receipt of money, up to the repayment of the last instalment, are apparently so rigid, and necessarily so, that cultivators very often do not care to put themselves to so much trouble. They would rather go to a local moneylender and get a loan quickly, showing their property as a collateral security or mortgaging it, even though they may have to pay a greater rate of interest. Consistent with safety, it is worth while considering whether the rules could be made less rigorous. Also when the Agricultural Department is better manned, it is also worth while considering whether agricultural officers may not be entrusted with this work. Incidentally it will make the department better known and even more popular than it is now.

QUESTION 9.—SOILS.—(a) (i) The most urgent line for the improvement of soils in the Madras Presidency is the incorporation of organic matter or humus, to build up gradually the productive power of the exhausted soils most of which have reached their minimum cropping values.

This incorporation of organic matter is engaging the attention of the departmental officers, and, apart from green leaves which were formerly used for manurial purposes, green manure crops are now regularly grown in the fields and ploughed in to a large extent. A better preservation of cattle manure is essential. Synthetic farm yard manure has recently been taken up and it is expected that it will be widely adopted.

(ii) The reclamation of alkali lands is not a serious concern for this Presidency.

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(*iii*) Erosion of surface soil by flood water is mostly a localised work and, on the principle of a stitch in time, putting up *bunds* and allowing for natural drainage has to be attended to, as soon as any small damage has been done.

(*b*) (1) Several acres of land of marked defective drainage in the Periyar tract of the Madura district have been brought under cultivation and have shown distinct improvement, as a result of the application of green leaves, green manure crops and municipal rubbish and the carting of different kinds of soils.

(2) As a result of ten years' work at the Manganallur Agricultural Station in the Tanjore district, in which judicious manuring and seasonal cultivation were carefully practised, surrounding villages have improved their lands to a greater producing power.

(3) Over a block of 45 acres comprising the wet lands of the Central Farm, Coimbatore, the average yield of paddy has increased from about 2,500 lbs. to 4,000 lbs. per acre, in the course of 15 years, as a result of good cultivation and careful manuring.

(*c*) The best that can be done is to sell such lands as far as possible to the residents of the village in open auction. If the areas are fairly large and exist in blocks, the sale may be advertised widely, so that people outside the village who wish to invest in lands may take them up. At the same time, it is worthy of consideration whether these blocks of lands may not be assigned to agricultural students on low rental or on long lease.

The methods of reclamation of lands which have gone out of cultivation can be detailed only after an inspection of the lands, in the light of the reasons which have led to the abandonment of cultivation therein.

QUESTION 10.—FERTILISERS.—(*a*) There is necessity for both natural manures and artificial fertilisers in the country. Owing to the demand from foreign countries, indigenous manures like bonemeal, fish manure and poonacs are comparatively more costly at present than imported artificial fertilisers, calculated on unit values. A judicious mixture of both kinds is often the most useful. The higher cost of fish manure is also due to a lower "catch" on the Malabar coast in recent years.

(*b*) It is desirable to have a Fertiliser Act in which the analysis of manurial ingredients is guaranteed. In some cases as in fish manure, adulteration is not necessarily fraudulent, but is often due to the defective system of drying fish in the sandy seabeach.

(*c*) Popularisation of new manures can be effected by demonstration in selected demonstration plots on ryots' lands and by intensive propaganda.

(*d*) There has been a considerable increase in the use of manures in most of the deltaic soils of the Presidency, especially Tanjore. The planters have always been the biggest purchasers.

(*e*) Potash manures are generally not required for the soils of Madras. Phosphates in the form of super, bonemeal and flour phosphate have been fairly well investigated and, with the supply of nitrogenous manures or green manures, there is an increase in crop production, especially in the yield of grain. Most of the work on phosphates has been done with regard to paddy. As regards sulphate of ammonia, it has been found a suitable, and at present a cheap, nitrogenous manure for paddy and sugarcane.

(*f*) The practice of using cowdung as fuel may be said to be on the decrease. It is only when forest wood is made cheaply available that the use of cowdung as fuel will further decrease.

QUESTION 22.—CO-OPERATION.—(*b*) (*vii*) From the successful results obtained by the Lalgudi Co-operative Agricultural Society's farm in the Trichinopoly district, I consider that it is desirable to extend the system. This Society leased out, on usual terms, 10 acres of paddy land in a block, from several ryots, and began to cultivate the same according to the advice of the Agricultural officers. The area is under the direct supervision of the

local Agricultural Demonstrator who has to obtain the necessary funds from the Secretary of the society who in his turn, is asked to maintain accounts in proper form. The members meet occasionally and go round the farm. After payment of the lease amounts in kind and after deducting all cultivation charges, there was a net profit of Rs. 300 amounting to Rs. 30 per acre last year. This small demonstration farm has created great interest amongst neighbouring villages and people are always welcome. There are vernacular labels stuck up in each field which explain the nature of treatment or improvement, and an illiterate cooly was able to explain to me what was being done in that area. It has great educational value amongst the cultivators.

(*b*) (*ix*) An Agricultural-Industrial Co-operative Manure Society was started with flourish of trumpets, at Shiyali in the Tanjore district, with very indefinite ideas and no knowledge of business and ended as a complete failure. When there are a number of small Indian-managed bone crushing factories which are working profitably for years, for instance the one at Kadambur in Tinnevelly district, the only reason that can be assigned for the failure of the Shiyali Society is lack of business methods. With a borrowed capital of Rs. 30,000 and a share capital of Rs. 19,000 machinery were obtained at enormous cost at the time of the War. The Registrar of Co-operative Societies conceived the idea, the Industrial Engineer designed and purchased the machinery, and the *mirasdars* were asked to run the manure works. The society has now gone into liquidation after causing complete loss to the shareholders and considerable loss to the Bank which lent the money. With careful management and a little forethought, this should have turned out a profitable concern. The failure of the society has given a set-back to the starting of similar undertakings in the district.

QUESTION 23.—GENERAL EDUCATION.—(*a*) The present system of education is mostly of a literary character. The brain is more rapidly developed than the hands and eyes which have not been trained to the same extent. Education, as it is imparted in schools and colleges, is more or less routine, whatever may be the theoretical methods advocated in training institutions. The object of education is to prepare the pupils and students for examinations, and the nature of public examinations is such that a student can afford to waste 11 months in the year and cram in one month and pass equally well with one who has been applying himself to his studies throughout the course. There is no stimulus for thinking and no incentive for developing powers of observation. There has been going on a great agitation in recent years amongst educational experts against this one-sided education, and one of the methods suggested is to tack on technological studies, including Agriculture, to schools and colleges in all stages of education.

What is wanted is to make educated classes appreciate the dignity of labour and get them to realise that the acquirement of a certain amount of literary education is not inconsistent with the doing of some manual work. On the other hand, an educated man must learn to do it better. With the diminished prospects of employment in the country for these literary—educated classes, they will soon have to get accustomed to manual labour, and I consider that it will be the first step and a new era for agricultural efficiency.

The remarks I have made above apply to all stages of education, collegiate, secondary and elementary, but more pointedly to the first two. The child, by nature, enjoys doing manual work with its tiny hands and, if only he gets a competent teacher, he will continue to relish manual work all his life. The Scout movement which is now rapidly spreading in the country is an illustration to show that young boys are not averse to manual work

(*b*) (*i*) The only possible method whereby rural education may be improved on the desired lines is to have more efficient teachers—teachers who can use their hands and eyes and who can show their pupils how to use them effectively. Let me illustrate my remarks by quoting some figures from the last Report of the District Educational Council of Coimbatore. During the year 1925-26 there were 1,617 elementary schools for boys and 2,250 teachers. Of these, 39 were secondary trained and 33 secondary untrained teachers; there

were 280 higher elementary trained teachers and 158 higher elementary untrained teachers; while the lower elementary trained teachers were 755 and the lower elementary untrained teachers were 1,002. Put in other words, 1,757 out of 2,240 teachers had never read beyond the lower elementary stage, and a thousand of them were untrained as well. The teachers in these villages neither command respect nor are they sufficiently paid for mere subsistence, and most of them are married and have families to maintain. Is it possible to train the future pioneers in agriculture with teachers of the above type?

After all what is taught at present in most schools is a little reading, writing and arithmetic, and there is possibly no scope for regular nature study, even though that subject may be included for departmental reasons in the time table.

(*b*) (*ii*) There is a great demand for education in rural areas as may be judged from the large number of applications sent by these villagers to the District Educational Council for the opening of new schools. Compulsory elementary education has been introduced into six Muncipalities of the district of Coimbatore. 9,645 boys out of a population of school-going age amounting to 11,003, have attended schools in 1925-26, working out to a percentage of 88, while the corresponding figures for boys in the rural areas of the district are 38,044; 1,81,367 and 21 per cent. respectively.

That more pupils of school-going age will attend schools, if there is adequate provision, is seen from the figures for girls' schools, although there is no compulsion for girls to attend schools. 4,525 girls out of 10,109 girls of school-going age, *i.e.*, 45 per cent. have attended schools in Municipalities, while only 5 per cent. of the girls of school-going age have attended in rural areas.

In my opinion education up to the elementary standard must be made compulsory both in towns and villages. It will add to the efficiency of the ryot classes.

(*b*) (*iii*) The chief reason why there is a small proportion of boys in rural primary schools in the higher classes is that they can earn some wages for the family or do some work on their fathers' lands. It may also be due to inability to pay the school fees for the higher class; and if a boy cannot do much manual labour, he can at least attend to the grazing of cattle and sheep or scare crows in a field of ripened *cholam*.

Question 24.—Attracting Capital.—(*a*) Men of capital are often business men who will invest capital in concerns which will bring them largest profits. Investment in banks is the general practice. There are, however, men of means who care more for the security of property than for the earning of a larger interest, and most people in the country who have earned money in different walks of life, wish to, and actually do, invest in landed property. It is not so much a matter of enterprise with them, but a question of safe investment for their children. One may sell his land to meet the cost of education of a son, but, as soon as the son begins to earn, the one ambition of the family is to invest the savings in landed property.

(*b*) The factors which tend to discourage owners of agricultural lands from carrying out improvements are:—

(1) General inertia and a disinclination to take trouble; and agriculture is a business which involves trouble and constant attention.

(2) A general sense of contentment, as long as sufficient income is received for the ordinary requirements of the family.

(3) Several owners of lands are absentee landlords, who have either leased out their lands for fixed yearly payments in cash or kind, or who have entrusted their lands to ill-paid local agents, who often fight shy of, and even resent, any outside interference, like the preachings of an Agricultural Demonstrator.

(4) Want of definite knowledge about the possibilities of help from the officers of the Agricultural Department.

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(5) Want of funds to purchase the improved implements or the manures recommended.

(6) Want of facilities of cattle and labour.

(7) Lastly a certain amount of want of confidence in the preachings or the Agricultural Demonstrator, as there are still people who consider that the departmental officers are more theoretical than practical, and who are also sceptical about the results of experiments said to have been achieved in Government Agricultural Stations.

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Oral Evidence.

10716. *The Chairman:* Rao Sahib Ramaswami Sivan, you are in the Indian Agricultural Service?—Yes.

10717. You are the Government Lecturing Chemist in the Agricultural College at Coimbatore?—Yes.

10718. You have been good enough to put in a very carefully prepared note of what you wish to lay before the Commission, and my colleagues and I are greatly obliged to you for that. Do you wish to make any statement in amplification of your note at this stage, or shall we proceed at once to question and answer?—May I say anything that I have got to say, at the end?

10719. Most certainly. Would you please let the Commission have a short account of your own training and previous posts?—I passed out of the Agricultural College, Saidapet, in 1892, taking the Diploma in Agriculture, first in my class of 40 students. I passed the B.A. examination in Chemistry as a private candidate, using the knowledge which I had learnt at Saidapet for passing my Chemistry B.A. I was employed as Farm Bailiff at the Saidapet farm, in the first six years of my service. Later, I was employed as a Lecturer at the Agricultural College at Saidapet, and latterly, from 1908 up to date, at Coimbatore. During this period, for three years, I was Lecturer in Chemistry at the Engineering College, Madras, teaching applied chemistry to the Senior Engineer students of the B. E. classes. Starting with my knowledge of chemistry acquired from Mr. Keess, who was the Professor of Chemistry at Saidapet, I had laboratory training under Dr. Lehmann, who was the Agriculturist Chemist to the Government of Mysore, Dr. Van Geyzel, Chemical Examiner to the Government of Madras, and, for a little while, under Dr. Wilson, who was Professor of Chemistry at the Presidency College, Madras. I also had some training at the hands of Dr. Leather, and a little from Mr. Collins who was Assistant Agricultural Chemist to the Government of India in the old days. I had been lecturing in the earlier days on geology, meteorology and physiography. I was teaching agriculture for some time, but for over 25 years, I have been practically connected with the teaching of chemistry, inorganic, organic and agricultural, both theoretical and practical. I have been connected with a little journalistic work as Editor, for three or four years, of the *Journal of the Madras Agricultural Students' Union*, and I have been in fairly close touch with agricultural movements in the country. I have attended several Science Congresses, and am one of the Referees for the Agricultural Section thereof. I presided, in the absence of Sir Ganga Ram, who should have presided on that occasion, at one of the meetings of the Agricultural Section of the Indian Science Congress, when I read a small paper on the scope and limitations of agricultural research. My chief work has been teaching, and, whatever time and leisure I could devote to research work, I have done more as a hobby than because I was asked to do anything in that line. One of the subjects on which I have done a fair amount of research work was on the question of the phosphate problem in Southern India about which I have read a number of papers, published a number of bulletins and pamphlets, and recently published a memoir on the utilisation of mineral phosphate as a manure for the paddy lands of Tanjore. I acted, as early as 1912, as Agricultural Chemist; I relieved Dr. Harrison in 1917 and had officiated as Agricultural Chemist, Madras, of and on, for two and a half years, before I was appointed to the Indian Agricultural Service. I may say I am an Agricultural Chemist by profession and a Lecturing Chemist by designation. The expression "Lecturing Chemist" is rather a new thing. It looks as though it were coined particularly to describe some of us. In other colleges, we would be called Professors of Chemistry or something like that. I am afraid that the designation "Lecturing Chemist" looks as though I am not a real Agricultural Chemist, but I consider that I am really an Agricultural Chemist by profession. When I retire a few months hence, I propose to make agricultural chemistry a means of getting on in the world, probably putting up a board as "Consulting Agricultural Chemist." I have moved very intimately amongst the ryot classes. During these years,

when I was doing the phosphate work, I came into very intimate contact with the ryots, and I know generally, as much as an official can know, their difficulties and their limitations.

10720. You have been in touch with those who have been carrying on research work, although you have not been, as you say, free to devote yourself to it to the extent that you would have liked?—Because, all the time I was put in charge of teaching. They said " You are very clever at teaching " and I was put to teaching.

10721. May I question you for a moment on your note as printed and put before the Commission? With regard to question 1—Research—, I rather gather that you are seized with the importance of organising research on the lines of team work?—Yes.

10722. What do you think of the organisation and work of the Indian Central Cotton Committee as a type of team work?—It is with reference to one single crop and the funds are provided by an outside agency to start with, by the British Cotton Growers' Association. A cotton cess was levied for the purpose, and I have no objection to particular crops, not only of special importance for India, but of international interest as it were, being tackled " crop-war " in a particular place. I do not know whether it is a branch of the Central Board; apart from the question of administration, it would appear that, for the purposes of research in cotton, a good place was wanted. Bombay was selected, and in Bombay there is an organisation in which very good research work is being carried on; it is almost similar to the work on sugarcane being carried on at Coimbatore.

10723. I am referring to the Technological Institute and the laboratory?—I have not seen it.

10724. Do you approve of the general notion of organising research according to crops?—Not always. For instance, take the case of paddy; I would like Madras to develop on paddy on its own lines, and if Bengal has got to do it, it should do it separately. The problem of rice growing in Madras is probably a little different from the problem of rice growing in Bengal.

10725. *Professor Gangulee:* A little different?—I think there is a little difference in practice, but there is much more of climatic differences.

10726. *The Chairman:* Would it not be true to say that, while a problem of that nature may have a great deal in it that is common between this Presidency and, let us say, Bengal, there would be certain elements of the problem which would be particular to this or that Province? Would that be a fair way of saying it?—Even if it were so, I think it is desirable to have a separate paddy research station for Madras and another separate research station for Bengal. There is no harm in duplicating to that extent.

10727. So that, as far as paddy goes, you would not apply some such organisation as the Indian Central Cotton Committee to that crop?—Personally, I would not.

10728. Are you yourself engaged in any research work at the moment?—I am just now trying to devise manure mixtures on the present unit values of different manunres available in Southern India for the deltaic lands of the Presidency. It is a work which I have taken upon myself, not because I was asked to do it. My chief object is to arrive at what are called assimilation factors, according to Dr. Kellner's work in Japan. That is to say, if you apply a certain quantity of manure, containing so much of nitrogen, phosphoric acid and potash, you recover in the crop return only a certain quantity, even if it is a soluble manure; that is the assimilation factor in the manure, a factor which we have to take into consideration in determining the manurial requirements of a crop.

10729. Would you regard this particular problem, on which you are engaged on your own choice, as a fundamental problem, or as a problem of pure science? How would you describe it?—It is a fundamental problem.

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10730. Could you tell me what work has been carried on in the Presidency of Bengal on that particular subject?—I do not think the question of assimilation factors has been tackled, so far as official records go, in Bengal.

10731. So far as official records go, are you satisfied that you would know if research of that sort had been carried on?—I think it is desirable that they should carry on separately.

10732. You do not think that any inter-communication would be useful?—I think it would be useful; I think I should know what they are doing and they should know what I am doing.

10733. But, like most people who have studied the history of research, you are not too frightened by the existence of a certain amount of duplication?—I am not afraid of it. As a matter of fact, there is necessity for it.

10734. You probably realise that duplication very often leads to valuable correction of results which, in many cases, has led to discoveries of the utmost importance?—Yes, and there are side lines which will be indicated to us when we are duplicating; it is not only a question of personal error; there is the question of different soils, climates and other conditions with which we deal.

10735. On page 152 of your note you say, "Research workers who specialise in particular branches of learning must devote their lives to it. For the sake of an allowance of a sum of Rs. 150, scientific experts have had to relegate their research work, often times in the past, to their assistants and subordinates, although they were drawing their main salaries as experts." Will you describe very shortly the circumstances in which this allowance of Rs. 150 has so prevented the careers of experts?—There is an allowance of Rs. 150 attached to the post of Principal of this College. In Madras, of all the Agricultural colleges in India, the man who is actually teaching is not necessarily the Principal. The senior officer on the spot is appointed Principal; he is either an Economic Botanist or an Agricultural Chemist or a Mycologist or a Paddy Specialist, or a Cotton Specialist as at the present time, people who have their appointments in the regular cadre of the Indian Agricultural Service and draw their salaries as such. Now when they take on the duties of Principal, it is my opinion that it is not humanly possible that they could devote the same amount of attention to their research work when they have multifarious duties to do as Principal. The duties of the Principal of this College are not exactly on a line with the duties of the Principal of an Arts College like the Presidency College, because there it is only the administration of the College, while here he has the administration of the estate, roads, sanitation, lighting, etc., so that, let alone the correspondence involved, the amount of time that he has got to devote to all these little details is so great, as a matter of fact the annoyance in attending to these details is so much, that I do not think it is possible for any research worker to devote his full time to research.

10736. To pass to another subject in your note, you are very clear as to the inadvisability in your view, of any central organisation being set up which might have an authority over provincial Departments of Agriculture, or over the direction of agricultural research in the Provinces. You say, and if I may say so I agree with you, that any proposal which traverses, either in letter or in spirit, the idea lying behind the Reforms of 1919 will not be acceptable to the Provinces and would be doomed to failure? Nevertheless, may I take it that so far I carry you with me, that is the view expressed in your note. If that is accepted, there is still the possibility, is there not, of setting up some central advisory body, not administrative in its function, not executive in its authority, but able to encourage co-ordination between Province and Province and able, we might hope, to support the financial resources at the disposal of any particular Province for any particular piece of work. Do I make that clear?—Yes.

10737. How would you envisage the creation of some such central body as that which I have outlined? I want to be perfectly plain that there is no question of compulsion; there is no question of overriding authority; the

initiative might rest with the Province; a particular problem would come up for investigation in a Province; if the authorities in the Province desired the advice and perhaps the financial help of the central advisory body, they would submit their plans and ask for advice and financial assistance as well. How would you view a suggestion of that sort?—You said that such a body would be purely advisory?

10738. Purely advisory?—And would be an honorary body also?

10739. I am not prepared to commit myself to that now?—Because my answer is going to depend upon that. If it is going to be a costly Board like the Railway Board, if it is to entail the salaries of five officers at Rs. 3,000 each, I think that, in course of time it will assume mandatory powers. A proposal to appoint a particular person or a particular set of research officers to be financed from the provincial revenue might be suggested as benefiting that particular Province. What I mean is this: if such a proposal is suggested, it is quite possible that the local Legislature may not accept it. The Minister is responsible to the local Legislature. If it is not accepted once, if it is not accepted a second time, and if it is not accepted a third time, it is quite possible that a proposal of that kind which involves some kind of financial liability upon the Province might be certified by His Excellency the Governor. That is a contingency which might arise and about which I know the local Legislatures are fairly delicate. They rather wish to avoid all chances of giving an opportunity to the Governor to certify. When grants are not voted by the Provincial Legislature, it is left to the Governor to certify.

10740. Yes, I am familiar with the constitution, but I do not quite follow the application of your argument to the particular proposal I have in mind; probably we have misunderstood each other?—The Central Board may send up a proposal; it may be advisory. The proposal may involve some financial liability on the Province. In such cases, the Legislature may accept, and then it is well and good; but suppose the Legislature does not accept, then there is the possibility that it may be said to the Legislative Council: "you are people who do not know anything; the proposal has come from an expert body; therefore you should accept it; if you do not accept it, the Governor will certify, or rather the people in charge will ask that it be certified." That is why I asked if it was going to be an honorary body. If it is not going to be a paid agency, I think it is worth trying.

10741. Are you quite sure you are right on a point of fact? Are you sure you are right in suggesting that certification by the Governor would be within the law on the particular point you have in mind?—I think so. I think, when the Legislature does not vote, the Governor has the power of certification. I am subject to correction; I am not a member of the Legislative Council and I do not know much about it.

10742. *Mr. Kamat:* Which subjects do you mean?—Transferred subjects.

10743. *The Chairman:* But provided there was no question of salaries attaching to services on the Advisory Board, you think there would be no difficulty?—No.

10744. Then it is possible?—Provided it consists again of officials and non-officials. I want that the Central Board, if there is one, should be more a non-official body than an official body. We have suffered in the past by not taking non-officials sufficiently into our confidence; if you are going again to create an organisation of officials, I think it is not going to help us very much.

10745. If the Central Board consisted partly of representatives chosen by all the Provinces, partly of representatives of the Central Government and partly of gentlemen of distinction who have shown interest in, and knowledge of, agricultural matters, if it consisted also of those who in the course of their business, buy and sell or manufacture agricultural products, would that be a sort of body which you have in mind?—Even then I say it should be confined to questions of international concern as far as possible rather than of Provinces. If the Provinces want advice they will ask for it; I think advice need not be thrust upon people who may be unwilling to take it.

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10746. I agree; if the Provinces want advice, they should ask. But whom do you suggest they should go to for advice?—Certainly not the kind of Central Board that you are now suggesting.

10747. I want a constructive suggestion; you must have something in your mind?—It is my opinion that the kind of Central Board you are now thinking of, consisting of a number of people, some officials and some non-officials and so on, is going to be extremely unwieldy. I do not think that, even in an advisory character, they could give much help. I mean it is going to be so unwieldy and the problems of the different Provinces are going to be so great. I do not quite see how this Central Board is going to help the Provinces.

10748. You envisage, you say, the possibility of Provinces desiring advice; will you tell me where you suggest the Provinces should go for advice?—I have just suggested a scheme for that kind of collaboration of experts; I would rather go to them. I mention it on page 162.

10749. Yes, I recollect it; I have read your note with great care and interest. Do you envisage a body of that sort having any funds at its disposal?—Yes.

10750. Where do you suggest those funds should come from?—From the different Provinces.

10751. As a contribution?—Yes; or from the Government of India if the Government of India think it is of sufficient interest; I would rather have it from the different Provinces.

10752. Do you think there might be any difficulty in defending in any Province a proposal to spend in other Provinces the money subscribed by the first Province?—I have not thought about it.

10753. It is a very definite possibility, is it not, under your scheme?—I should say the money should come from the Central Government.

10754. You are coming back to my point of view now, are you not? I thought probably you would agree with me sooner or later. You want money from the Central Government. You quite agree that the Central Government are not to be put in the position of dictating, but do you not think if the Central Government funds are to be used, the Central Government should at least have an opportunity of advising as to the direction in which the central funds should be spent, and of withholding central funds if the object for which central support is invited does not comply with the conditions and does not satisfy those who represent the Central Government. If my suggestion is carried out the Central Government officials would have the assistance of provincial representatives and also of persons who have general experience in agriculture and in commerce?—Will you allow me to answer this question a little later?

10755. Certainly; I am not pressing you any way; I hope I have made it plain?—Yes, I have understood your point.

I should just like to make it quite clear. In this scheme which I am suggesting I conceive the Province as being at liberty, either to submit its scheme and to ask for a blessing and for advice, or not to submit its scheme but to carry out its scheme by itself on its own funds; so that, to that extent the Province is absolutely protected against any infringement of its political, parliamentary, or constitutional position.

10756. Now on page 152, section 8, routine and research, you are talking about the need of separating all those who show aptitude for research from those whose capacity is of a more ordinary nature. Do you think that process is being carried out sufficiently rigidly at the moment?—In my opinion, no.

10757. In paragraph 9 on page 153, you are talking about the provision of post-graduate training. You say, "All that is required is a Government Order, formally sanctioning the admission of advanced students for post-graduate study." Are you suggesting there the granting of salaries to post-graduates?—Not necessarily, but in the University they are giving University stipends of Rs. 75 per month, tenable usually for two years. Those stipends

are given for B.A. Honours men, and recently Bachelors of the Science of Agriculture have been considered eligible for that purpose. There has been only one applicant so far. A student may get a University stipend or he may not get a stipend, but there should be provision in the department. Recently, when a student of that kind applied for post-graduate study in agricultural economics, we turned it down saying, "We have no facilities for teaching agricultural economics here; you had better go to the University of Madras." I think we ought to be able to take students of that kind. Half a dozen Honours graduates in chemistry came to me and wanted to have a little post-graduate study in agricultural chemistry here. There is no provision for it here, those men have to apply to Pusa. They have to be recommended by their respective Provinces, and as students from the whole of India have to be selected at Pusa, these people have small chance of admission there either. All I can say is there is ample provision in Madras, I would not say of the highest kind of education, but there are grades in everything, and they can certainly have the immediate post-graduate course at Coimbatore.

10758. On page 153, paragraph (11), you are talking of the increased recruitment of agricultural graduates into the science sections. You point out what you hold to be the growing tendency in recent years to draft fresh science graduates who are not all of them, honours men, into research sections to the exclusion of agricultural graduates?—Yes.

10759. If you had the appointment in your hands and there were two candidates, one a science graduate and another an agricultural graduate, if the science man were slightly better than the other, whom would you choose? —I would choose the agricultural man.

10760. In spite of the fact that the science graduate is slightly better in general scientific qualifications?—Slightly better in general scientific training, but the other man is decidedly better because of his all-round knowledge; it is the application of science to agriculture that is wanted.

10761. Then you go on to say it is not pure science that matters. I suggest to you the explanation of the fact that so many of those whose ambition is to excel in research work fail at a certain point in their career is that that is the point where their shortcomings in the fundamental sciences find them out, and that your statement that it is not pure science that matters is an unsound one?—To that extent I grant it is; the wording might be slightly changed. May I just explain that point in my own way? There have been cases of science graduates, University B.A.'s in Science who have also taken the agricultural degree, who have been passed over in favour of an ordinary pass B.A. Both have passed the same examination; one has got an agricultural degree in addition and he has been passed over.

10762. That is an instance, if I may say so, of what in your view is a hardship, but it is not an illustration of the general principle which I attempted to lay down. With reference to question 1 (*c*) on page 154 do you feel that more ought to be done for the farmer of dry cultivation?—Yes.

10763. You think he is the man who is in most need of assistance?—He is the man who needs considerable assistance.

10764. You do not think he has had a fair show?—No.

10765. Are you quite sure?—Quite sure.

10766. What would you say to the initiation of a degree of rural economics in this Presidency?—We have now got a degree; it is not called a degree in rural economics; it is a degree in arts and sciences, but in that course rural economics is only an optional subject of study. I do not know if it is called rural economics but they, in fact, study economics.

10767. You follow broadly speaking what I mean? When I ask about a degree of rural economics I ask your opinion: do you think it would be to the advantage of this Presidency if such a degree were founded?—I think so.

10768. Do you think it would be well if officers in the Public Services, other than the Agricultural Service, know a little more about rural economics than they do at the moment?—I think so.

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10769. On page 160, paragraph (6), you are talking about the need of advertising the Department of Agriculture. I think you said the Department of Agriculture should be advertised. Have you any proposals?—I do not mean to say that people do not know of the existence of the department. What I mean is that the possibilities of help by the department to the people are not very well-known, and that can only be done by officers moving more among the people. I daresay the Agricultural Demonstrators, Deputy Directors and Assistant Directors are moving much more closely among the people now than they did sometime past; but I want them to enter into the spirit of the life of each village; I want them to move much more. As I have explained at one place, it is no use their doing what is called their routine work. My recent experience has been that these agricultural officers are moving much more closely now; that is the first step of advertisement. The second is we must have some kind of shows in the towns, however small they may be. If shows have not been a great success in the past, that is no reason why they should not be a success in the future. More co-operative societies have sprung up and they are doing much more work than formerly and I dare say agricultural shows will be a very good method of advertising. I know there are a number of difficulties, but difficulties are meant to be overcome and must not make us turn back. The work of the Agricultural Department is entirely missionary in character; we cannot use any compulsion; and being a missionary, the man who does the work must be enthusiastic. This is what I mean by advertisement; I do not merely mean placarding and so on.

10770. On page 163 of your note, you deal with the question of Finance and you say, "One of the methods of financing provision for short-term credit to cultivators which may be suggested is the one similar to what is adopted by some manure firms to help the planter." In the case you are citing, the firm selling the fertiliser allows the planter to have the fertiliser on credit secured on his crop, so that it is a definite hypothecation of credit to a particular debt. What particular object are you proposing to finance by this method?—Agricultural purposes.

10771. In general?—In general, not for marriages; not for the discharge of prior debts; I would say, for all agricultural purposes organise this kind of State aid, and this can be done by village panchayats.

10772. How would you secure the repayment of these loans?—The crop is mortgaged to the panchayat.

10773. Take the ordinary peasant to-day; he has got his land revenue to pay; he has his own personal and household expenses; he has also his existing debt to pay, which is probably much more than he can manage. How would you propose to recover the capital and interest on the further loan advanced by the State?—The crop is harvested and measured in the presence of one or more of the members of the panchayat; they just take hold of it, and if the man is really in debt they can probably give him a further advance based upon his next year's crop, if they think the man has sufficient security. I am suggesting it should be only to the extent of one year's crop. If it is a crop of paddy in good land which will fetch Rs. 100, I say there is nothing wrong in giving an advance of Rs. 50 to that particular cultivator, and the crop as it is harvested may be taken over by these men. Now what happens is, the ryot gives his paddy to the moneylender. I am not suggesting a millennium; what I am suggesting is a palliative, something which will free him from the hands of the more usurious moneylender. He will in any event be obliged to sell his crop to somebody.

10774. And you think by that method you can provide funds for the ryot's agricultural operations, and at the same time finance his existing debt and his household expenses?—Yes, up to the extent of the value of his crop.

I am quite certain you have a distinguished career behind you as a Research Chemist, but if you will not think me rude in saying so, I do not believe you will ever be a Chancellor of the Exchequer.

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10775. Dealing with Soils on page 163: Is it not the case that there is a shortage of phosphates in the soils of the Presidency?—Yes, there is a shortage of phosphates generally.

10776. You say, "The most urgent line for the improvement of soils in the Madras Presidency is the incorporation of organic matter or humus to build up gradually the productive power of the exhausted soils." Is that even more urgent than the supply of phosphates which you have described as the existing limiting factor?—I consider the incorporation of organic matter is the first thing because our experiments have shown that, without organic matter or nitrogen in the soil, the phosphates do not respond.

10777. Now I come to Co-operation on page 164 of your note. You are describing a co-operative society formed in the Trichinopoly district at Lalgudi; is that right?—Yes.

10778. You say, "The society leased out, on usual terms." Do you mean by that that they obtained the usual terms on lease?—Yes.

10779. You say, "The society leased out, on usual terms, 10 acres of paddy land in a block." That is from the ordinary proprietors?—Yes.

10780. Who is managing the society, do you know?—The Secretary is the manager, he has got the help of the local Agricultural Demonstrator; the Secretary keeps the funds and the servants are under his charge.

10781. It is really a demonstration farm?—Yes; a small one.

10782. *Mr. Calvert:* Who is the Secretary?—One of the cultivators; as a matter of fact, he was one of those from whom a portion of the land was leased.

10783. *The Chairman:* On page 166, you are dealing with General Education and you suggest that the girls respond to any increased opportunities of education. Do you suggest that this tendency would be as noticeable in rural areas as in urban areas?—I think so. I am speaking from a little experience, because I know that even the servant girls here come and join special classes when they are held for them.

10784. Lower down you point out that a boy can at least attend to grazing of cattle and sheep, or scare crows in a field of ripened *cholam*. Do you think the boy's parents are entitled to that service from their own child or not?—It depends upon the father's position; if he is fairly well-to-do, I do not see any reason why he should not send his child to the school; when he is poverty-stricken, I believe he has no other choice than to get the maximum out of his children.

10785. But if you insisted upon compulsory education in towns and villages, then of course, and I do not say it is not right to do so, you will deprive the poorer man as well of the services of his boy?—But in course of time, the boy who has higher education will be of greater efficiency.

10786. But still you are definitely in favour of compulsory education?—Yes.

10787. You know that at the moment, unless I am wrongly informed, it is open to any community in this Presidency, through its elected representatives, to accept the principle of compulsory education; is not that right?—You mean there may be anybody who may want to be exempted?

10788. The District Boards in this Presidency have a right to apply compulsory education?—I do not know about the District Boards, but the Municipalities have gone in for it, and several of the Taluk Boards have voted in favour of compulsory education.

10789. I am asking you a perfectly clear question: Is it not within the competence of any District Board to pass a rule which will have the effect of making elementary education compulsory and administering it?—I do not know whether they have got the powers.

10790. *Sir Ganga Ram:* Have you specialised in chemistry?—Yes.

10791. Organic or inorganic?—I know a bit of organic and a bit of inorganic chemistry.

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10792. Applied chemistry?—Chemistry as applied to agriculture, I know, but not chemistry as applied to other industries.

10793. It is the first time that we have heard that the Legislative Council has been very fair in providing funds in the budget for agriculture. Will you explain that? Do you mean that generally there is no lack of inclination on the part of the Council to provide funds?—No. The Council is liberal in providing funds.

10794. Well, about Research, if you were drawing up a programme for three years on the understanding that there is any amount of funds available, what researches would you first spend money on?—I would say, the first limiting factor for crop production is water; you get the maximum out of the land by the help of water.

10795. Do you mean quantity of water?—I say the first limiting factor for crop production is water.

10796. You mean the quantity of water that is required by each crop?—For mere growth the first limiting factor is water; and the utilisation of all our researches is limited by the water factor. For instance, the question of dry farming is one which concerns the conservation of soil moisture; irrigation and the conservation of soil moisture, I should say, should receive first attention.

10797. On page 164 you have used the words "good cultivation" and you have distinguished that from manuring. What do you mean by good cultivation?—Ploughing with suitable ploughs instead of small wooden ploughs.

10798. How many times?—Wet land is ploughed eight times.

10799. That is paddy land?—Yes, paddy land.

10800. In dry land?—As many times as you can.

10801. Can you tell me whether in good years the ryot can grow cotton and save something after meeting all his requirements for food and other things?—There were one or two years when, owing to the fabulous prices obtained for cotton, they were able to make money; but I do not believe that they put it by as a saving.

10802. Can they not thereby make up for the deficiency of food in famine years?—No, because these people, when they got money from cotton, spent freely and did not save it. I would rather that they went in more for food crops.

10803. If they grow cotton, they will have some reserve to draw upon in famine years?—I would rather coax the land to yield more food produce than it is giving now.

10804. *Sir Thomas Middleton:* On page 153 of your memorandum you note that there has been a tendency to draft science graduates into the research sections to the exclusion of agricultural graduates, and you quite rightly, in my opinion, deplore that tendency; you would like to see agricultural graduates qualify for the research posts. Now I want to get from you, if I can, the reason for that tendency?—The tendency is chiefly due to this; the science men are trained by men from outside; the agricultural men are trained by us; we use the men we have trained for agricultural work as Demonstrators, and we get people from outside for research work. I do not think that the recruitment of people trained outside should be completely stopped; what I say is that the agricultural men should have an opportunity whenever there is a chance. At present it is chiefly owing to paucity of workers for the agricultural section that outside men are taken into the scientific sections. Now, the science men can be made to learn agriculture in course of time. My contention is that there are good B.Sc. Ag. men who have a very good knowledge of science. As Chairman of the Board of Examiners, my instruction to the examiners is this: the papers set should have a standard higher than the pass standard, though not so high as the honours standard; that is, so far as chemistry and botany are concerned. So that, to say that people passing that examination have not got as good a knowledge as the ordinary B.A., is wrong. I speak from experience, both of B.A.'s and B.Sc. Ag.'s.

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10805. That does not answer my question. The point is this: the fact exists that these men are being preferred. Why are they being preferred?—I believe the Head of the department chooses them. As a matter of fact, there are agricultural graduates, who have learnt these sciences. I only want that the particular tendency should be removed. I do not say that posts should be earmarked only for these and never for the others.

10806. I quite follow that, but why does that tendency exist?—I do not know.

10807. What is the difference in the course of training for these two groups of men, the B.A.'s and the B.Sc. Ag.'s Both enter the course at the Intermediate stage, I understand?—Yes.

10808. What amount of chemistry, which is your subject, do the agricultural men get in the final course?—They have the whole of organic chemistry which is done by the other class, the pure science men; they have agricultural chemistry in addition; the people from the Presidency College, for instance, do not do as much simple quantitative analysis, and much less of anything of agricultural chemistry. We have got to teach them, for one or two years, the elements of agricultural chemistry.

10809. Your answer shows that so far as chemistry is concerned, they are better qualified?—Yes, at any rate, not less qualified; probably the same remark applies to botany.

10810. *Dr. Hyder:* Are you referring to the graduates of the Madras University?—Yes, graduates of the Madras University.

10811. 'Pass' men or 'Honours' men?—I am not talking of 'Honours' men.

10812. You are simply talking of 'pass' men?—Yes.

10813. *Sir Thomas Middleton:* Your statement was that these 'pass' men of the Madras University were occasionally preferred to agricultural graduates?—Mostly 'pass' men; there are very few 'Honours' men

10814. We have reached no explanation yet; I can only assume that there must be something in the personal qualifications of the men?—That may be so.

10815. You explained to us that both the men who take the B.A. in Honours and, I understand, the B.Sc. Ag.'s are eligible for stipends for post-graduate work. Is that so?—Yes.

10816. How many stipends are offered by the University?—About ten, for all subjects.

10817. I think your point was that the stipends are confined to the Madras University?—Yes.

10818. And they cannot be used outside?—No.

10819. What you desire is that there should be a greater number of open stipends?—I am not very particular about the stipends. My concern is only about the training given. Whether they are to have stipends, or whether they are not to have stipends, and where the stipends are to come from, is not my concern.

10820. The stipend is merely a means to training and you want to get them trained at the institution most suitable?—Yes.

10821. *Dr. Hyder:* How many periods do you have to teach?—Six hours' lectures and 14 hours' practical in a week.

10822. By hours, do you mean the ordinary school period or the full hour?—I mean a full hour of 60 minutes.

10823. Is there complete separation of research and teaching at this institution of yours?—It is now complete.

10824. Do you think that is desirable?—Certainly, that is my opinion.

10825. This complete separation is desirable?—Yes, provided that facilities for the research workers coming in occasional contact with teaching are provided.

10826. You have been, so to speak, a teacher?—Yes.

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10827. Would it be better for you to carry on research and would it be better for the research man to deliver lectures to your students, or to have an interchange between teaching and research in the case of the same man? You would, in that case, be lecturing for a certain number of periods, and you would also be engaged in research work, but I understand from you that there prevails at this college, a complete divorce between teaching and research, and that your research men do no teaching whatever. Is that so?—Yes, unless we call upon them to give some special lectures.

10828. Is that done?—Occasionally; when we ask them, as a matter of courtesy they oblige us.

10829. Would it be good for the training of the students in your college, if those students were taught regularly by people who were carrying on research?—Certainly, that is what I have mentioned. May I draw your attention to my note on page 157?

10830. You deplore the tendency which prevails here of the preference given to graduates in pure science; they are drafted into the research sections, and your agricultural students pure and simple are not taken in such large numbers?—There are some, and they have done very well indeed.

10831. You have got a very old and long-standing connection with this institution, extending over, I suppose, two decades?—Practically all my life.

10832. Here are the qualifications for admission: "Candidates shall have passed completely the Intermediate examination in Arts and Science of the University of Madras, and shall have qualified in group 1 or 2 thereof, or an examination of some other University recognised as equivalent thereto." These are the qualifications for admission. If a graduate of the Madras University in pure science is appointed here, he gets agricultural training, surely? —He does not get agricultural training; the man comes and straightaway gets appointed as an officer; he does not get any agricultural training; a pure science man comes here and becomes probably a teacher to the Agricultural College students; that is my point; he does not get any agricultural training.

10833. Surely, the University standards in science, chemistry or physics, or biology or botany would be higher?—The University B.A. standard is good, the B.Sc.Ag. is not inferior. I say I am teaching both; I know the kind of instruction which is given in Arts colleges, and I know the kind of staff whom I am getting, and I know the people whom I am training.

10834. I am not talking of your regular teachers; I am talking of the research that is carried on here under these teachers, attached to this college. I understand that these teachers prefer a pure science man to a graduate of your college. I submit to you, do you not think that so far as that pure science man is concerned, his training is better than the training which is specialised in the case of agricultural graduates?—It is a matter of opinion. I consider that if the knowledge of science possessed by the B.A. is greater, then what you say may be correct; but I do not accept that; I say, as a teacher of 25 years' experience, that the knowledge of science possessed by a B.Sc.Ag. student is not inferior to that of a B.A. 'pass' man in chemistry or botany, and if he has got to learn an additional amount of science, he can learn it much more quickly than the B.A. 'pass' man can learn agriculture, because agriculture is a practical subject.

10835. For carrying on research in entomology or an allied subject, knowledge of agriculture would not matter. If the research is confined to the principles of pure science, a knowledge of agriculture does not matter; it does not matter to the man whether he has received any training in farm management; an entomologist has to find out remedies for insect pests and do plant breeding work?—He could not know anything about it; it would take him much longer to learn the habits of growth of a plant.

10836. He would know that if he had taken botany?—You do not expect a man to learn three or four sciences.

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10837. Can you tell me whether the teachers and those who are engaged in research get enough opportunities of meeting other men working in other Provinces, apart from these annual gatherings at the Science Congress?—None at all.

10838. You think it would be desirable that you should have Associations on different subjects, for instance, the chemists of this Presidency coming into contact with the chemists from other Provinces, so that you may discuss the subject?—I have made a proposal to that effect on page 161.

10839. *Dewan Bahadur Raghavayya:* Please see paragraph (4) on page 155 of your replies. There you propose periodical transfers of the staff from Teaching to Research section and *vice versâ*. Is that reconcilable with your statement that the teaching section and the research section, which are quite separate in the college, should continue to be so? Do you not think that the periodical mutual transfers of these officers would prejudice the continuity and success of research work?—I do not want all the staff to be transferred. Probably the Head of the section would not be transferred. What I want is that the subordinate staff and the Assistant Professors and the Professors must have a transfer from time to time, so that there will be new blood coming in; otherwise, there is a tendency for the teaching to become stereotyped, and even in the case of the Head of the section, I should not mind if there was an occasional transfer. For instance, a Deputy Director may go out as a Professor of Agriculture, and the Professor of Agriculture may work for a time as a Deputy Director; they may change. Such an arrangement has been found to be very useful in other professional colleges, for instance, in our neighbouring Forest College. I do not say you should necessarily change, but the change of a few men occasionally seems to be of some use. If a teacher is getting into a stereotyped vein, it is better to have a man who has been dabbling in research for some time as teacher.

10840. Is not continuity an essential of successful research?—There is the Head to see that the continuity is kept up.

10841. You say that this proposal should relate to the subordinates?—Mostly, but occasionally also to the Chief. If such a thing does not take place, if there is a contingency on account of the illness of anybody or some other cause, there is nobody to take his place. I do not want such a contingency to take place in such a big department as the Agricultural Department.

10842. In the research department itself, are there not men who can readily take the place of the man who is temporarily absent?—They can, but they will not; they refuse to come. My experience is that the men working in the research section refuse to go to the teaching section; they say "We do not want to go to the teaching section." I am referring to the research section men.

10843. But you do not want them?—I want them occasionally, a certain leavening. There will be an improvement in the kind of teaching by having an occasional transfer. That is my opinion.

10844. Please refer to page 158, sub-paragraph 4, of your replies. You suggest that land should be assigned preferentially to agricultural students who should be helped with money for initial outlay. Are you aware of any culturable waste lands or disforested lands which are good enough to be brought under that scheme?—From reference in the Questionnaire I believe there are waste lands available in the country.

10845. Twelve and a half millions of acres?—Probably, yes.

10846. But are there good culturable waste lands with soil suitable for this experiment?—I wish that the Revenue Board or the Agricultural Department should depute an officer to make out a statement of culturable lands.

available in the different parts of the country, or at least let the college students know whether there are culturable lands. I believe that information is not available easily here, unless one gets it from the Collectors' offices.

10847. So you desire that the matter should be investigated?—I think so.

10848. Would you extend that experiment to educated youths who are willing to take up such a career?—Those who have not had any agricultural training?

10849. No?—I have no objection to Government giving lands on request to anybody.

10850. Subject to proper precautions?—I am only asking that you should also consider agricultural students along with other people in the matter of giving out lands.

10851. Is it in your opinion desirable that it should be done? Do you think that the educated man who does not seek service but who wants to enter upon land and cultivate it will be in a position to do agriculture better than the man without education and that he should be helped to get land?—I think so; but not to the exclusion of agricultural students, I hope.

10852. No, I do not mean that?—I understand that such a system has been followed elsewhere. Sir Ganga Ram told me yesterday that it was followed, and was a great success, in the Punjab.

10853. You refer to Adult Education and the work that is being done under that head. Are you of opinion that adult education is becoming popular? —I cannot say it is becoming popular; we cannot wait until people demand it; there are so many cases in this world where you have got to put things before the people before they ask for them. If you are going to wait for the popular demand, I am afraid that no advance at all will be made in very many things. If you put a library in a village, it will be used, and, from what I know of the work of the District Educational Council of Coimbatore, I see that there is a demand whenever a few library books are placed in an almirah in a village.

10854. Have you visited any centre of adult education?—Yes.

10855. Do you find the work done there encouraging?—Not quite; the schools are attended by a number of small boys of 12 or 13 much oftener than by the older men. The older men are so tired after their day's work that they prefer to go to the tavern rather than to the evening class.

10856. *Mr. Calvert:* What about the months when they have no work to do?—Even then I believe they are not likely to go to a regularly conducted class. I do not see there is such a demand for it. But if you have some kind of provision, I daresay they will utilise it.

10857. *Dewan Bahadur Raghavayya:* I see from the Report of the Director of Public Instruction that last year, that in one single year, over 700 adult schools have been started in this Province?—Yes.

10858. Do you think that those 700 schools would have been started had there been no real demand for them?—I daresay there is a demand; there were in Coimbatore district itself 137 adult night schools, 100 private schools and 37 under local bodies; but the arrangements for lighting were inadequate in some cases and, in the majority of cases, the classes themselves were unsuitable. The hard worked labourers used in the beginning to swell the ranks of the night schools, but you really have to maintain their enthusiasm for a sufficiently long time for them to learn anything useful. All I can say is there is a demand, but not to such an extent as one would wish; if you have a number of these schools, certainly more and more demand will come. Simply because they are not as much of a success as one would wish, I do not want that adult schools should be stopped.

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10859. So you have hopes for them?—Certainly. I have hopes. I only say they are not working at their best. Boys of 11 and 12 are mostly attending the night schools rather than adults, although they are meant for adults.

10860. Please refer to the last paragraph of your answer on page 159 of your note. You suggest: "One of the most effective methods for popularising agricultural improved methods, is, in my opinion, the constitution of Advisory Boards in typical localities." You are of course aware that there were Agricultural Associations in this Province in almost every district. How do you account for their failure in the past?—To be very plain, it was an official organisation.

10861. Official ridden?—Official ridden. The Commissioner for Agriculture said one day 'let there be an Agricultural Association'. He said to a retired secretary, 'Will you please be my Secretary for this Association?' In the same way he sent letters to the different Collectors saying: "Will you please organise Agricultural Associations?" They were organised; then a particular gentleman retired, or a particular secretary died, and the whole thing collapsed. You should begin from the bottom. You should begin from the village instead of starting agricultural societies from the Presidency. What has the Madras City to do with it? You must start Agricultural Associations from the village, and I want that the village panchayat should be the unit and not an Agricultural Association engineered by a Commissioner of Agriculture.

10862. I understand you to say that you want the village panchayat, or the co-operative society as the case may be, to constitute itself the advisory board for that particular village?—I did not say in that particular manner so far as the advisory body is concerned. What I say is this: suppose I have to carry on a certain amount of propaganda in a particular group of villages, I would like the Agricultural Demonstrator or the Assistant Director of Agriculture to form a kind of organisation within those few villages; I would entrust the secretaryship to one of themselves, though the Agricultural Demonstrator would still do the bulk of the work; you would thus make the people interested in the kind of demonstration you are doing. Now in some cases what happened was this: I go to a place and say "Look here, I am bringing some manure; I am going to put it on your land to see the relative effects of the manurial treatment and the non-manurial treatment. I shall bring the manure and put it on without any extra labour or cost to you". Now, if it were done like that, people would help very readily. They would think it an honour and not merely an obligation to allow their lands to be used. If you have a local organisation consisting of a few agriculturists and a few officers and take the people into your confidence and tell them exactly what kind of experiment you are doing instead of merely going about from one place to another, I daresay people will take more interest. I want an organisation like that. Now on a larger scale such an advisory body was thought of as early as 1883, I believe, by Sir Federick Price in Madras; it is nothing new; it is working exceedingly well in Mysore.

10863. Are you not going back to the old state of affairs? You are suggesting an Agricultural Demonstrator to constitute the advisory board?—But it is not the Commissioner of Agriculture and his Secretary. It is not the Collectors that are doing it; it is not the Tahsildars that are organising these Associations. It is the agricultural departmental officers that do it.

10864. That is only a difference in Degree. You still want the official patronage and the official initiative?—Official patronage I want but not official control. When so many non-official organisations can exist in this way, the District Educational Council and others, I do not see why this one should not work. Formerly we had so many official associations. Now that Taluk Boards, District Boards, Municipalities and District Educational Councils are working as non-official agencies, I think agricultural work must also be more largely worked by non-official agency. The greater the amount

of co-operation we get from the non-official agency, the better, and the greater is our salvation.

10865. I do not think there is a difference of opinion between you and me in regard to that. The only question is who is to organise these associations? —The Agricultural Demonstrator may start it, but he must be helped to keep it going; it is the people who must run it; it should not depend on enthusiasm of one or two men. As I say, as our Director said just now, such organisations depend on the energy and enthusiasm of a few people; when these people are transferred, the organisation is liable to break down, and on that basis all kinds of non-official administration in the country will be a failure. In the whole country only a very few people take an actual interest and you must utilise them in the best manner possible. Now the co-operative societies have come to stay, and with village panchayats, in the whole Presidency organised for all purposes by an officer of the grade of a Collector as the Inspector-General of Panchayats, we are certainly going to have the village as the unit. There is progress everywhere. I am very optimistic in that matter.

10866. One last question about Finance. Do you not think there are already methods by which the ryot could be financed with a view to his getting manures and implements and meeting other expenses of cultivation? You have the co-operative agency which has plenty of money; it has so much money that it cannot spend it within the Province itself and lends it to the other Provinces; there is the Agriculturist Loans Act under which advances are made to the ryots for the purchase of manure, for the purchase of implements, for the purchase of seed grain and so on. What further organisations do you want?—The following remarks made by Sir Frederick Nicholson 35 years ago hold good to-day. The reasons are the same. The reasons given by Sir Frederick Nicholson are "ignorance of Government's willingness to lend, suspicion of its intentions, worry and delay in enquiries, frequent refusals, large demands for bribes or perquisites by taluk and village officials, opposition of taluk officers on account of the trouble of enquiries and of their knowledge that often money is not used as it should be, opposition of village officers who are aften the village moneylenders, strictness of recovery of instalments and so forth." Although there are 2 or 3 lakhs of rupees available for these loans, people do not take one-tenth of the amount available.

10867. *The Chairman:* Before you answer any other question, would you like to read the passage marked in the book I am passing up to you and say if you wish to correct the remarks you have made earlier? You see the provisions under which the Governor may certify. This is in reference to your contention that one of the possible dangers of the central body would be that it might lead to the Governor of a Province certifying legislation not otherwise certifiable. I have handed to you a copy of the Government of India Act which I think says that, agriculture being a Transferred subject, no certification of any measure relating to agriculture is constitutional?—I accept that.

10868. *The Raja of Parlakimedi:* You say that farms had to be given up as they did not serve the purpose for which they were intended, in Bellary, etc.?—Yes.

10869. Have they come into existence in other places?—Farms have been opened. Is that what you mean?

10870. Yes; have they been opened out of savings from other farms that have been closed?—It is not a question of substitution of new farms for farms that have been closed. The question is, why should farms be opened at all if there is no policy? I daresay more farms have been closed than opened afterwards.

10871. In different parts, farms are necessary to experiment upon the different valuable crops. The department have been saved the expenditure in those places where the farms have been closed. I wish to know whether

these savings have been made use of?—I suppose so. But what I want to say is this. A number of farms were opened and closed again without sufficient results having been achieved therefrom. Now new farms have been opened, it may be with the money saved by the closing of the other farms.

10872. What are your objections to research work being carried on by a central body on a common crop, for instance, paddy?—We want duplication in cropslike paddy which is so very important. It is something like this; India is not a small place; it is almost a continent. Being a continent, it is something like saying "They are doing certain research work in France; why should they do it in Germany, Belgium and other places." This is a vast country and I do not see why you should restrict research to a particular Province. Certain States in the United States of America carry on research work, and in some cases there is duplication.

10873. For instance, the conditions and manures necessary to stimulate the growth of paddy on all sides are practically the same?—Not necessarily. I may tell you that, in the course of the experimental work that I carried on in respect to paddy, the results that I obtained at Tanjore were different from those which I got at Coimbatore, which were again different from the results obtained in the Periyar tract. After all, these are within a distance of 200 miles of each other.

10874. You say that the conditions in the Northern Circars must be different from the south?—Yes, the conditions will be much more different between Madras and Bengal. Therefore, there is no harm if such fundamental problems are being attacked in two places and, in order that it may be done with proper care, I suggest that it should be done as a kind of team work, some problems being attacked in two or three places and all the several investigators making a report on a later date. Then the results could be compared and the generalisations made.

10875. Then with regard to your remarks at page 164, paragraph (*c*) in question 9, referring to soils, you suggest that the improved lands may be auctioned to the public?—I do not say, improved lands. I am talking about areas which have gone out of cultivation. Supposing there are areas of culturable waste lands which are now out of cultivation, these should be thrown open, that is the point.

10876. On page 164, you say that the best that can be done is to sell such lands as far as possible to the residents of the village in open auction. If the areas are fairly large and exist in blocks, the sale may be advertised widely, so that people outside the village who wish to invest in lands may take them up. At the same time, it is worthy of consideration whether these blocks of lands may not be assigned to agricultural students on low rental or on long lease. I do not think there is much advantage to be gained if the land is only capable of producing bad crops?—In my opinion agriculture is a very difficult business and a man must take trouble. A man who takes trouble must get something out of these lands. It may be that these lands may be out of cultivation, probably because of want of attention. It often happens that, if one has some very good land, he cultivates only a part of it and pays less attention to the rest. The other lands may be comparatively good but they are not cultivated. A careful cultivator, by means of intensive cultivation, may be able to produce crops thereon. In some of the Periyar tracts, they have done this. Lands which were practically considered useless in the year 1911 by Dr. Harrison when he examined the soils, are not recognisable now. The ryots have actually filled the soil with six inches of new soil or of municipal refuse from the Municipality of Madura, and as a result they have changed it altogether. Agriculture is a business which requires serious attention.

10887. *Professor Gangulee:* With reference to the answer you gave to the Dewan Bahadur, you waxed eloquent about non-official agency. Can you explain why no such organisations have yet sprung up? You want things

to come from the bottom. Can you explain why there is no sign of non-official organisations springing from the people?—Should I answer that question; it is almost a political question.

10878. You must explain it because it is important?—Somehow or other, I should consider that the administration of the village as a unit has practically gone out in the present time; I will not say why; it has gone out. The villager is not sufficiently educated; the rich man who made his solemn promises before the Chancellor of the University that he would do this and that, was so selfish that he did not attend to the less educated people, with the result that there was a set of people who became rich, well-to-do higher classes, and another set of people who were left in need and poverty. It was a kind of social suppression as it were. The man with his coat on and with a little smattering of education thinks himself superior. The result of this has been that there is a serious cleavage between the educated higher classes and the uneducated classes. The highly educated man has not imparted the benefits of his education to the village people as he promised to do. The result is that, in the villages, you have got no organisation of any kind; there is only one thing, and that is that everybody is going to the court and spending money in litigation; except that one habit, nothing else has been learnt by the villagers, and I do not know whether you can call that good.

10879. You are about to retire from the Indian Agricultural Service?—Yes.

10880. How many years' service have you put in?—A total service of 33 years and a pensionable service of 30 years.

10881. Most of the time you have spent in educational work?—Yes, most of the time.

10882. Have you done any research?—Yes.

10883. In agricultural chemistry?—Yes.

10884. Will you tell us of any research in agricultural chemistry that you have done, that has been of considerable value to agriculture in Madras. Of course you must have done research in many subjects, but I want you to mention one single agricultural chemical problem you have undertaken which may be of considerable benefit to Madras agriculture?—There is a deposit of 80 million tons of mineral phosphates within 30 miles of the Cauvery delta practically untouched, impure stuff, containing a large amount of iron, aluminium, and calcium carbonate.

10885. You are referring to the nodules?—Yes; these nodules can be converted into flour phosphates and can be used along with green manures, also in suitable mixtures with sulphate of ammonia. So far as paddy is concerned, I have just shown that an increased crop can be obtained as a result of using the mixture I have devised. I have studied the comparative merits of bonemeal and flour phosphates as suppliers of phosphoric acid. I have studied different organic manures as suppliers of nitrogen, and I have devised a mixture which has given good results for the last two years, and which I hope to complete before I retire.

10886. Did you make any soil survey?—As a matter of fact, I was completely responsible for one, and I took a certain amount of responsibility for two others.

10887. And in the surveys, one of the conclusions you arrived at was that there was phosphatic depletion in Madras soils? There is considerable depletion?—There is considerable depletion of phosphates.

10888. In answer to the Chairman, you said that you attached greater importance to the incorporation of organic matter or humus than to the supply of phosphates. Where there is a supply of phosphates in the soil, I agree, the supply of organic matter will stimulate the soil; but when there are no phosphates in the soil, what will the supply of organic matter or

humus do?—I never said that you should supply only humus and not phosphates.

10889. Before you supply organic matter to the soil you should also increase the phosphates?—I will show you some charts from which you will see that the supply of phosphates alone to paddy soils has not given any result; whether it is super-phosphate, bonemeal or flour phosphate, you will not get any result unless you put in organic matter, or nitrogen in some form.

10890. In the type of soil which shows phosphatic deficiency, before you add any organic matter or humus to the soil, you must be quite sure that phosphate also is added?—I never said that phosphate should not be added. As a matter of fact I want the phosphate to be added.

10891. I wanted to make that quite clear. Is it a fact that there are certain parts in the Presidency where the law of diminishing returns is in operation?—I think there is a tendency recently towards a general improvement; it is not so bad as it was.

10892. I wish to have information on the method of teaching. You say you teach six hours in the week; you teach agricultural chemistry, I suppose?—Organic chemistry and agricultural chemistry.

10893. Supposing you want to teach the mechanism of nitrogen fixation, you would explain the matter technically; would you not?—Yes.

10894. And then would you go to the laboratory and show some experiments there or would you go, to the fields and show the points relevant to the subject?—As a matter of fact that particular subject is not fully taught; nitrogen fixation is a specialised branch of bacteriology, and the students have not the time, consistent with their other requirements, for a practical study of that subject.

10895. Do I understand that, for an Agricultural degree like the B.Sc. Ag., you do not teach the mechanism of nitrogen fixation?—They are taught, but they have no time to do it practically themselves.

10896. You only teach?—I think we may teach and leave the technical details alone.

10897. Do you carry on any laboratory experiment, or teach them only through the text books? Do you conduct actual experiments either in laboratories or in fields?—Do you want to find out what I know of agricultural bacteriology?

10898. I want to know how these important subjects are taught?—If you are asking me a question about agricultural bacteriology, I may say I have not specialised in it.

10899. On the subject of the mechanism of nitrogen fixation, I want to know what methods you follow in this College for teaching?—I do not think that subject is being taught completely; only lectures have been given. This is one of the subjects in which I ask for the co-operation of research officers. In this case, Mrs. Norris was the Government Bacteriologist, and at my request, she gave a few lectures on the subject illustrated by demonstrations. Similarly with the subject of malting in general, although I could explain the general principles, there was another officer who was specially engaged in that work and I asked him to give three or four lectures, which he did. That is the kind of work that I want research officers to do. It is not possible for one to specialise in each and every subject.

10900. Have you studied the question of dry farming?—I have, from a general point of view.

10901. With regard to manure mixtures, you give an example to show their limitation. You are referring to your mixture?—Yes.

10902. You say, on page 159, "For example, the application of a manure mixture suggested by me has brought in an average increase of 10 per cent.

in the yield of paddy grain which, for a scientific worker, may be considered a satisfactory result. 10 per cent. increase, however, on a yield of 3,000 lbs. amounts to 300 lbs. while a similar increase on a yield of 1,500 lbs. is only 150 lbs. of grain. The former pays the cost of the manure, the latter does not." From that I gather that that mixture is a wrong mixture for that particular case, that it is not workable?—It is not a question of not being workable.

10903. It will not pay?—It will not pay in that case. You seem to know some science, and I hope you will agree with me that, for a scientific worker, the economic question does not arise. First of all, he is concerned with the question of the amount of nitrogen, phosphoric acid, etc., in a manure required to produce a certain yield of crop. The economic question comes in later. I have simply given an example to show that a 10 per cent increase will not pay for a certain farmer. Simply because there is an increase of 10 per cent in the yield, I cannot straightway tell a farmer that he can use my mixture.

10904. Have you carried out field experiments?—I have carried out field experiments with reference to phosphates.

10905. What is the procedure?—I write to the Deputy Director of Agriculture, who selects the owner of the plot who is willing to place the land at my disposal. The land is then divided into a number of plots. With reference to the experiments on phosphates, I divided the land into ten plots of ten cents each, omitting outskirts, and pegged them out carefully. Five plots were manured, and the other five were left in the way the ryot would leave them; the plots were separated by small bunds; both sections were planted in the same manner, by the same coolies, and treated in all respects equally, except for the method of manurial treatment. The Agricultural Demonstrator visits the place once a fortnight and sends me progress reports of the growth. At the end, the Agricultural Demonstrator, or one of my Assistants, goes there, harvests the outskirts first, and then harvests each particular plot separately; the crops are then allowed to dry and they are weighed. The average of the five manured plots and the average of the five unmanured plots are taken, and I thus find how much increase there has been in grain and how much in straw. We take care to cut the straw closely and uniformly; otherwise there will be no uniformity. In the Tanjore districts some labourers leave 1½ feet of straw uncut and others less or more. The results having been obtained, samples are taken of the grain and straw and these are sent to me for analysis; I analyse them and, based upon the analysis and based upon the amount of yield of grain and straw, I calculate the amount of nitrogen and phosphoric acid the plant has taken from the manure. Is that a correct procedure?

10906. *Mr. Calvert:* Discussing the *taccavi* loan system, you have suggested that agricultural officers might be entrusted with the distribution of the loans; would you also entrust them with the collection of the loans?—Excuse me; on that particular matter, I just mentioned the opinion of Mr. Benson who was Deputy Director of Agriculture long ago; I do not know exactly who should recover it.

10907. Then, you suggest that there should be a Chair of Agricultural Economics for post-graduate teaching?—Not only for post-graduate teaching, but for the general teaching of agricultural economics in this College.

10908. Is there any one in the Presidency who is qualified to occupy such a chair?—If you consider a person who has taken an Honours degree in Oxford University competent for it, I believe there is one.

10909. There is an Indian Officer who has taken his degree in Economics in the Oxford University?—Yes, and he happens to be Professor of Agriculture at the present time; but he is also Superintendent of the central farm, and he has many other duties; I believe he devotes only a small portion of his time to agricultural economics. If you make him a full-time Professor of Agricultural Economics, I believe the question will be solved.

R. S. M. R. Ramaswami Sivan.

10910. *Mr. Kamat:* May I know who invented this designation of 'Lecturing Chemist,' and when, about which you complained to the Commission?—It is a long story, but I will make it very short. About 15 years ago a Government Botanist was appointed Sugarcane Expert to the Government of India. That appointment was divided into two parts; one was occupied by a European Officer and another by an Indian Officer; the former was called the Government Economic Botanist and the latter was called the Government Systematic and Lecturing Botanist. This designation was created when Dr. Barber was appointed Sugarcane Expert to the Government of India. When the separation of teaching and research in chemistry took place, I believe, following that precedent, they gave me the designation of Government Lecturing Chemist.

Sir Ganga Ram: On page 167, you conclude by saving, "Lastly a certain amount of want of confidence in the preachings of the Agricultural Demonstrator, as there are still people who consider that the departmental officers are more theoretical than practical, and who are also sceptical about the results of experiments said to have been achieved in Government Agricultural Stations." I only wish to remark that the ryot knows a lot more about economics than we give him credit for. He would not leave a crop which is paying Rs. 100 per acre in favour of a crop giving Rs. 15 an acre, and moreover, you ought to know, as an Agricultural Chemist, that cholam sucks the blood out of the land.

10911. *The Chairman:* Sir Ganga Ram had better ask a question. I believe what Sir Ganga Ram was going to mention was, that without that particular knowledge of the commercial side of farming, as you mentioned just now, they are not quite confident, and therefore there is a tendency for the people to think that they cannot tell them much about the commercial side?—Yes.

10912. I think I must give you an opportunity of expressing your views as to the wisdom of a purely advisory central body. I think I have disabused your mind of any fear that anything of that sort might have an influence on any Governor's judgment as to any particular measure. If your model is the United States, your case in that respect is against the central body, because I suppose there are no federal systems in which the Central Agricultural Body is more powerful or active, or in which the Central Agricultural Organisation pays more attention to it than in the United States. Have you studied it more closely?—No.

Then I think you had better leave that alone.

10913. I wonder whether you wish to say anything as to the possibility of a purely advisory body, which may or may not have a certain amount of funds at its disposal, proving a success. Do you wish to say anything?—Yes, provided it is honorary in its nature, and provided the different Provinces are fairly well represented.

(The witness withdrew.)

RAJA SIR VASUDEVA RAJA OF KOLLENGODE, KT., C.I.E., MALABAR.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(*a*) All research works affecting the welfare of the agriculturist and especially those in regard to insect pests and fungus diseases which attack the crops, and the investigation of their causes and their preventives are of considerable importance. This is being done in the Agricultural College at Coimbatore but the results are not known to the agriculturists, a majority of whom are illiterate. Mere issuing of leaflets will be of no use but frequent lectures among the agriculturists by a member of the department will be of considerable benefit. Every taluk must have at least one officer who will be engaged in this and in supplying other informations to the ryots in regard to agriculture. Research works can be done only in places like the Agricultural College at Coimbatore but it should not be expected that the agriculturists will avail themselves of the results by seeking them but on the other hand the information should be brought to them.

The indigenous theory and traditional methods of agriculture have a firm hold now upon the agriculturists. Any attempt to do away with it or radically change it is likely to meet with failure. The only aid which scientific research can render to this ancient theory and practice of agriculture is to make the agriculturists understand intelligently the reasons for the various operations which they carry on. Research must therefore be directed towards investigating the reasons for the various operations which they carry on and the result of the researches must be put in popular language. It should then be carried to the actual cultivator in the form of lectures. If such information can be carried to the actual cultivator through the agency above suggested it is possible that the actual cultivator may begin to appreciate the value of the information. This will further lead him to do what he has to do punctually, accurately and neatly. At this stage it may be possible to suggest modifications, improvements and probably radical changes in his method of doing things. If the research department of agriculture is doing this kind of work now nothing more is needed than to extend the scope of it. If such work is not being done now the sooner it is begun the better it would be.

(*c*) Researches to find out subterranean resources of water-supply with a view to enable ryots to sink wells should also be undertaken. A soil survey of each district will also be of immense use.

QUESTION 2.—AGRICULTURAL EDUCATION.—(*i*) The supply of teachers and of institutions is not sufficient.

(*ii*) There is urgent need for extension of teaching facilities in all districts.

(*iii*) Teachers in rural areas may preferably but not necessarily be drawn from the agricultural classes.

(*iv*) There are only two schools in this Presidency, one in Malabar and another in Vizagapatam, where agricultural education is imparted. The one in Malabar is situated in a remote corner and out of the way place and hence the attendance is not satisfactory. If more schools are started in various centres within easy reach of the agricultural population the institutions will gradually have increasing strength.

(*v*) The incentive for lads to study agriculture is mainly want of other occupations and the desire to follow their fathers' profession.

(*vi*) Most of the pupils are drawn from the agricultural classes.

(*vii*) The existing course of study in rural schools has only just begun and and it is too early to suggest modifications.

(*viii*) To every school there must be attached a school farm for practical study and demonstration.

(*ix*) The career of the majority of students who have studied agriculture is agriculture.

Raja Sir Vasudeva Raja.

(x) The middle class youths in the first instance have neither lands nor capital nor have they as matters now stand the means of acquiring the same. Any device by which capital and land could be made available to them will be an inducement to them to take to agriculture. Further when they realise the great possibilities of agriculture they would naturally take to it.

(xii) The adult education in rural tracts can be improved by starting night schools and by giving lectures.

(xiii) The administration of rural schools may be placed in the hands of village panchayats where they are in existence. The expenditure on agricultural education would be a legitimate charge upon the land revenue. A portion of the land revenue sufficient to meet such expenditure may be set apart for the purpose.

QUESTION 4.—ADMINISTRATION.—(c) (i) The Agricultural and Veterinary services are at present very insufficient.

(ii) Railway communication is insufficient and unsatisfactory.

(iii) Village roads are insufficient and ill-maintained.

QUESTION 5.—FINANCE.—(a) The starting of grain banks, agricultural banks and co-operative societies specially intended to give advances for agricultural purposes is necessary. Agricultural loans and land improvement loans given by Government should be made more easily available to them than at present. There should be a special staff for granting loans under the Agricultural and Land Improvement Act.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(a) The main causes of borrowing—(i) A large number of actual cultivators are not hereditary cultivators but belong to mere cooly class that has no capital. These and a large portion of even hereditary cultivators are very poor with neither cattle nor seeds. They carry on the agricultural operations only with borrowed capital at a very high rate of interest. It is only bad cultivation that is possible with this class of people. The result is they are neither able to pay the rent to the lessor nor to discharge the debt borrowed. This operation is carried on by them from year to year making them perpetual borrowers. If such class of people are prevented from assuming the role of cultivators, the rest of the real cultivators would be in a far better position as larger area would be available for cultivation which alone will leave a sufficient margin of profit to them. The result of the pressure upon land now by all sorts and conditions of people as cultivators is that agricultural holdings are parcelled out into such small areas that it is capable of leaving no margin of profit to any class of cultivators thereby rendering almost every one of them unable to carry on the cultivation without borrowing money and grain.

Other causes are loss of cattle by epidemic diseases, failure of crops for want of rain and poor harvest on account of the attack of insect pests and diseases of crops and lastly imprudence of the tenants.

(ii) Good faith and honesty is the main source. Expectation of good harvest and the village moneylender's avarice.

(iii) Reasons preventing repayment are mentioned in (a) 1.

(b) The only measure which will lighten agriculturists' burden of debt will be to provide some means by which he can get loans at small rates of interest. This he cannot get except from the Government. Legislative interference to deal with rural insolvency, etc., will do more harm than good because he can get neither money nor grain under altered regulations.

(c) The answer to this is contained in the above. Any interference under this head will deprive them of all means to carry on cultivation. Non-terminable mortgages should certainly be prohibited.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—By excessive sub-divisions it ought to be prevented. Division of corpus must be put an end to but division of interest in holdings may be tolerated. The only way by which this can be effected is by the shareholders appointing a common manager. There must be legislative authority vesting in some revenue officer or other the power to appoint a common manager in case of disagreement among the shareholders.

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It must be made a condition for the division of interest that it must be accompanied by a provision for a common manager. The obstacles in the way of consolidation may be overcome in the same way as suggested above for fragmentation.

QUESTION 8.—IRRIGATION.—(*a*) I advocate irrigation schemes for Malabar where there is no irrigation project at all in operation by Government. There are three schemes under consideration by Government. These ought to be pushed through as expeditiously as possible. All encouragement by Government to induce either private individuals or societies to undertake minor irrigation projects should be given by the Government in the shape of advances as loans at low rate of interest and the acquisition of lands necessary for the construction of main and branch channels.

QUESTION 10.—FERTILISERS.—(*a*) Greater use can be profitably made of both natural manures and artificial fertilisers. Fertilisers are not popular now because they are not available to the agriculturists near their holdings. Their cost is prohibitive. Endeavour must be made by some means or other to reduce the price of these articles and place them within the reach of the agriculturists.

(*c*) By propaganda work.

(*d*) By making wood fuel available and cheaper.

QUESTION 11.—CROPS.—(*a*) (*i*) The improvement of existing crops can be made by selection of seeds and the production of better and healthier seedlings and the application of sufficient manure.

(*ii*) There is scope for the introduction of new crops and fodder crops.

(*iii*) There is great necessity for distribution of better seeds.

(*iv*) There is good deal of damage to crops by wild animals and this can be prevented by giving free licences for firearms on a more liberal scale.

QUESTION 12.—CULTIVATION.—I suggest a more extended use of the Meston ploughs.

QUESTION 13.—PROTECTION OF CROPS.—Spraying with a mixture of copper-sulphate, lime and resin to prevent the Mahali disease has been found to be very efficacious. But in regard to many other external infections remedies have yet to be discovered and applied.

QUESTION 14.—IMPLEMENTS.—If improved agricultural implements and machinery are made available in rural parts at reasonable prices they would be adopted by the cultivators.

QUESTION 15.—VETERINARY.—(*b*) (*ii*) The need for expansion of dispensaries is not adequately met. There is wide scope for expansion.

(*c*) (*i*) The existing dispensaries are not availed of by the cultivators simply because they are at prohibitive distances besides being far and few.

(*ii*) I have not heard of any touring dispensaries in Malabar, such dispensaries will be of immense use.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) An average cultivator has work for about seven months. During the slack season he does practically nothing.

(*b*) Creation of opportunities for taking to subsidiary industries would induce agriculturists to take to them.

(*c*) Want of ready market at hand and want of organisation to marketing the products of such industry in bulk.

(*d*) Yes.

(*f*) Yes.

QUESTION 23.—GENERAL EDUCATION.—Under the existing system of education very little is taught that has a bearing upon the agricultural efficiency of the people. In high and middle schools I would suggest that agricultural subjects are also taught and as far as possible a farm is attached for practical work.

QUESTION 24.—ATTRACTING CAPITAL.—(*b*) The existence of numerous sub-tenures is always a great handicap to owners of agricultural lands to carrying out improvements.

Raja Sir Vasudeva Raja.

Oral Evidence.

10914. *The Chairman:* Raja Sir Vasudeva Raja, you have been good enough to put in a reply to the Questionnaire of this Commission, which we have all read with great interest; you have also been good enough to come here to-day to answer any questions which we may wish to ask you. Do you desire to make any statement of a general character, before we proceed to question and answer?—No.

10915. On the question of research, is it your view that the Agricultural Department have rendered important services to cultivators in this Presidency?—They have rendered some service, I think.

10916. Are you satisfied with the general directions to which their efforts are now being applied if you are familiar with those directions?—I think there is plenty of scope still; they can do more.

10917. Of course, the activities of the Department and of this College and Research centre are limited by financial considerations?—Yes.

10918. I do not know whether you have in mind any considerable expansion of those activities, because, if you have, I ought to ask you whether you suggest a further share of the present general revenue being allocated for purposes of research, or whether you have in mind new taxation?—I think that a greater proportion of the land revenue ought to be spent on agricultural education, research, etc.

10919. Of course, that is a far more popular proposal than the other at any rate?—Yes.

10920. Have you ever considered the advisability of Government levying income-tax on incomes derived from agriculture? Do you think that would be a popular measure in the Presidency?—I do not think it would be a popular measure.

10921. I should like to ask you whether, in your experience of the country-side, you have come across any of the co-operative ventures which have been started in this Presidency. Have you come into personal contact with any form of co-operation? Co-operative societies lending money?—Yes. Not for agricultural purposes.

10922. Have you come across these societies in their working?—No.

10923. On page 189, answering our question 7 you say that fragmentation of holdings by excessive sub-divisions ought to be prevented. I should rather have put it the other way myself, that sub-division by excessive fragmentation ought to be prevented. You cannot very well stop sub-division. Unless you stop the operation of the established law of inheritance, can you? Sub-division follows inevitably on the present rule and law of inheritance, does it not?—Yes.

10924. What you should do if you can, is to try, where you cannot prevent sub-division, to see that unnecessary fragmentation does not take place?—Yes, it ought to be prevented; the income can be divided but not the corpus.

10925. You say, "The only way in which this can be effected is by the shareholders," that is, the heirs of the deceased "appointing a common manager. There must be legislative authority vesting in some revenue officer or other the power to appoint a common manager in case of disagreement among the shareholders." You know the peasants of this country-side very well. Do you suppose that any attempt to appoint a joint manager amongst the co-heirs of a deceased landholder would be likely to lead to good management on the one hand and family peace and quiet on the other?—I do not think it will do any harm.

10926. You think it is possible?—Yes.

10927. Do you think the several sons would be content to take their share in cash or kind, and to allow the manager to function?—I think so.

10928. If you were in the insurance business in this Presidency, would you be prepared to insure the life of such a manager, at the ordinary rates of premium

or would you want something more? You do not think his life would be at some hazard with so many masters? You do not think that a manager serving four or five sons might find himself in considerable difficulty?—I do not think so.

10929. On page 190, you are talking about veterinary matters, and the need for the expansion of veterinary dispensaries. Do you think there is a demand among cultivators for skilled veterinary attention to their animals?—There is great demand, I think.

10930. What particular direction are you thinking of?—Cattle disease.

10931. Do you think there is a demand for further inoculation?—Yes, there is a demand for preventive treatment as well as for cures.

10932. Yes, but after all the non-epidemic diseases of cattle, until they reach the later stages of their life, are not so very important; it is the rinderpest and the other epidemic diseases that matter. What I want to get from you is this: in your experience of the country-side which you know so well, are the peasants anxious to have their cattle inoculated against, for instance, rinderpest?—Yes, they are.

10933. There is no superstitious objection?—Not that I am aware of.

10934. Do you think they have faith in the efficacy of that particular measure of prophylaxis?—In the beginning, they had not but now they have belief in it.

10935. You think there is a growing demand?—Yes.

10936. *The Raja of Parlakimedi:* From your experience of paddy cultivation, may I know what is the minimum area necessary to carry out proper improvements for paddy?—About 10 acres. If you want to introduce improved methods of cultivation and all that, you can do it on an area of about 10 acres, but you cannot do so on very small holdings.

10937. Supposing a man cannot afford to have an area of 10 acres, in such a case what is the minimum you suggest?—About 5 acres.

10938. Is fragmentation spreading very rapidly in Malabar?—Not generally in Malabar. It is not so with a certain section of population of Malabar, because in their case there is no division of family property, but in those families where division is allowed by law, fragmentation goes on.

10939. It is divided into as many pieces as there are families?—To a great extent that is so.

10940. *The Chairman:* Are you definitely of opinion that fragmentation is, at this moment, on the increase in this Presidency?—Yes.

10941. *The Raja of Parlakimedi:* With regard to manures, what is the usual plan adopted in Malabar for green manure?—We have private forests there. Many people go into the forest to get green manure and utilise the leaves. That is what is generally done. Some others also grow gram and other things to produce green manure. They grow wild indigo also.

10942. Are you growing any of the crops suggested by the Agricultural Department?—No; they are not grown.

10943. Why? Is it due to the difficulty in getting seeds or what?—I do not think many people know anything about them. I do not think they have been brought to their notice.

10944. Are there no Demonstrators in your part of the country?—I have not seen any yet. I was told the other day that there was one somewhere in Palghat, but he does not come to the rural parts or demonstrate anything or convey any information to the ryots.

10945. Are the zamindars putting any obstacle in the way of these people coming to their parts?—No, I do not think so.

10946. They welcome such people?—Certainly.

10947. *Sir James MacKenna:* Are you a large landholder, Raja Sahib, yourself?—I have got some lands, about 18,000 acres. I have got also more than 100 square miles of forests.

10948. You cultivate the land on your own behalf through a manager?—I have land on that system.

10949. Which you work as a home farm?—Yes.

10950. Is it in your neighbourhood in Malabar?—Not far from my neighbourhood.

10951. Are you in touch with the work of the Agricultural Department through its publications and other activities?—Yes.

10952. You apply the manures recommended to the land that you have got under your control?—Yes, to some portion.

10953. And probably from that example your other tenants may follow your lead? You see no indication of that?—It is not possible for all the tenants to adopt the improved methods of agriculture for want of funds. It is a difficult matter.

10954. That would not apply to seed which after all does not involve more expense?—That is true, but they must know the importance of it.

10955. Do you follow the system of transplanting paddy advocated by the department?—Yes, in some, I do.

10956. 1, 2, 3 seeds against 12, 13, 14?—Yes.

10957. Are you doing it?—Yes.

10958. Are you keeping cattle?—Yes.

10959. What breed do you have?—I have the Coimbatore as well as the Nellore cows; I have got about 800 cows.

10960. Pure breeds?—Yes.

10961. *Professor Gangulee:* Have you any agricultural officer in your service?—No; I have got only local men. They are not trained in the Agricultural College.

10962. Do you send them over here?—No; neither is any one available from here. I wanted to get some from the department, but none were available.

10963. Your agricultural agents have had some training?—No; they are only private farmers.

10964. Do you think it would be beneficial to your tenants to have a trained officer?—I think so.

10965. You intend to appoint one?—I do.

10966. On page 190 of your note you say, "There is great necessity for distribution of better seeds." Where do your tenants get their seed from?—They do not care to go outside and collect the seed. They are trying to improve the seed which they themselves grow on their lands.

10967. They do not go in for better seeds?—No.

10968. Your tenants get no advantage of better seeds and better manure?—No.

10969. With regard to subsidiary industries you say here "Creation of opportunities for taking to subsidiary industries would induce agriculturists to take to them." Have you any particular industries in mind when you make that suggestion?—That will depend upon the locality; it must vary from place to place. In Malabar there is scope for coir industry, basket making, mat making and small industries like decorticating ground-nut, cotton ginning, and so on.

10970. These industries are pursued by the agriculturists in addition to their agricultural pursuits?—No; they are not pursued now. There is scope for them.

10971. There is no subsidiary industry at present?—None.

10972. You say in answer to our question 24, "The existence of numerous sub-tenures is always a great handicap to owners of agricultural lands to carrying out improvements." Have you any suggestions to remove the handicap arising out of these sub-tenures?—The ideal would be to have only landlord and tenant. If there are too many intermediaries the actual cultivator gets absolutely nothing. The land gets into the hands of the cooly and he cannot

do anything. To have so many intermediaries is very injurious and moreover the owner will not invest his money in lands because there are so many intermediaries and he has no direct connection with the actual cultivator. So, in the interests of agriculture there ought to be omly the landlord and the tenant and not so many other people between.

10973. How to eliminate those intermediaries? Have you any suggestions to make?—So far as Malabar is concerned to some extent some of us are doing it. Tenants have not got permanent rights. We pay compensation and get the lands back in our possession and then we deal with the actual tenants directly.

10974. *Mr. Calvert:* In discussing finance on page 189 of your note you use the term 'agricultural banks.' Were you thinking of co-operative banks or something different from the co-operative banks?—The banks which will advance money to agriculturists.

10975. Co-operative banks or other kinds?—Other kinds.

10976. What other kinds?—Money lending banks or land mortgage banks. The ordinary banks do not lend money to agriculturists; they generally lend to merchants and not to agriculturists.

10977. You say land mortgage bank. Would that be a co-operative land mortgage bank or some other type?—It may be a co-operative bank or it may be any other, organised and financed by Government or in any other way.

10978. You have no specific proposal?—No.

10979. Then you say that agricultural loans should be made more easily available. Have you any suggestions to make as to how it is to be done?—In the first place, the ryots do not know of the existence of the Agriculturists' Loans Act or the Land Improvement Act and so on; even those who do know something about them have to go with applications to the Revenue Inspector who is in charge of many villages; he is a touring officer and it is very difficult to find him in the first place and secondly, it is very difficult to get his sympathy and in some cases it has to be purchased. All that means a lot of difficulty to the ryots. If there is a separate department for granting agricultural loans (the money will be quite safe because the lands and improvements will be security), if there is a special agency working for granting the loans, I think it will be easier for the ryots to get money.

10980. Your suggestion is a special agency?—Yes, a special agency. Now the Revenue Inspector is the nearest man to go to and it is not easy even to find him.

10981. On page 189 of your note discussing this question of loans at small rates of interest you say that this cannot be done except from the Government? —Yes.

10982. Do you not think that the co-cperative society can in course of time lend money at lower rates than Government?—I do not think so.

10983. Are there not societies which will lend money free of interest as in the case of certain Mahommedan communities in the Punjab?—I do not know of any society which gives money free of interest.

10984. The Muslim population will not take interest?—I do not think that is possible; they may rather invest their money in other ways; they may not lend. I do not think anybody will lock up money like that.

10985. When you say there is scope for the introduction of new crops, had you any special new crops in your mind?—The crops that we see in the experimental stations of the Agricultural Department. If any particular crop will pay better that can be used. At present we are following the old stereotyped way of farming without introducing anything new. But if the results in the Agricultural Department farms show that any better or more profitable crops can be grown such things may be introduced and there is a good deal of scope for that.

10986. Have you yourself, Raja Sahib, been trying to experiment with such crops on your estate?—No, I have not.

Raja Sir Vasudeva Raja.

10987. *Mr. Kamat:* It has been suggested. Raja Sahib, that Rajas. zamindars and big landholders do not undertake, for instance, cattle-breeding or make any improvement though they might be in a position to do it. Have you anything to say on that?—It is not a fact; I have got not less than 800 cows and I keep them in different farms, that is for the sake of manure more than for milk or other purposes, so that I need not bring cowdung from a distance.

10988. *Sir Ganga Ram:* All of the same breed?—Yes.

10989. Which breed?—The ordinary Coimbatore, what we buy from Pollachi which has a very big market. We have got also a few Ongole cows.

10990. *Mr. Kamat:* Do you take care to keep the breed pure and if so by what method?—We have got only one breed; there is no cross-breed at all.

10991. *Sir Henry Lawrence:* What is the name of this breed?—I think it is the Kangayam breed. What is procurable in the Pollachi market we have; they all come from the Coimbatore district; these are the ordinary country bred animals.

10992. *Mr. Kamat:* And do you take special care of your breeding bulls?—I have got an Ongole bull which is kept separate and looked after; but in general I give attention only for the Ongole cows which provide milk for our household purposes. The other cows are all kept in different parts.

10993. To your knowledge do other big landholders experience any difficulties in cattle-breeding?—The chief difficulty in breeding cattle is the problem of food because the cost is very great.

10994. Even for big landholders?—For everybody.

10995. That means the price of fodder is increasing?—Yes, and oil-cakes are all exported. It becomes a problem to keep cows except in the case of people who have forests. I happen to have a large area of forest, so I can keep any number of cows. Such landlords as have got large estates keep cows. The other people do not, on account of the economic difficulty in keeping cows at great expense.

10996. Do such landlords avail themselves of the scientific knowledge of the Livestock Expert?—No, they do not.

10997. *Rao Bahadur Muniswami Nayudu:* Are you in touch with village life in the eastern parts of the Presidency?—I have been to several places, I do not know what you mean.

10998. You have not visited the villages and seen the villagers?—I cannot say I have been to small villages.

10999. You have been to towns. Life in Malabar villages is entirely different from the life in villages in the eastern parts of the Presidency. Do you know that as a fact?—May I know in what respects you differentiate between the two?

11000. The rainfall in your part of the country is much higher than in the eastern parts?—Yes.

11001. Your soil is more fertile than the soil in the eastern parts?—I do not know that. I do not think it is in any way very much better than the lands in Tanjore, Trichinopoly and even Coimbatore.

11002. And the people who cultivate your lands have no interest in the lands? They are merely labourers or persons who share the produce?—The agriculturists who are cultivating the lands are poor people.

11003. There is a difference between the zamindari estates in the East and the zamindari estates in the West? The zamindar or *janmi* simply collects the rent from the cultivator who is entitled to the benefit of all improvements on the land. In your part of the country the ryot has no interest in the land?—It is not so.

11004. You do not think there is any difference between the ryotwari lands and the *janmi* lands?—No. There are big landholders in the East Coast as in Malabar. In the town of Shiyali in Tanpore there is a Mudaliar and Nungavaram Rajappa Aiyar in Trichinopoly and others, who own enormous areas.

There is no difference between the *mirasidars* in the East Coast and the land holders of Malabar.

11005. Legislation has been introduced in the Legislative Council to give occupancy rights to tenants in your part of the country?—Yes.

11006. That has been opposed?—Yes.

There is a demand from the ryots in your part of the country for occupancy rights?

The Raja of Parlakimedi: The whole discussion is irrelevant.

11007. *Rao Bahadur Muniswami Nayudu:* I am just proceeding to say that the ryots have no interests in the land?—That is not so, they have the right to compensation for their improvements in Malabar and they do get compensation when they are turned out. In other districts they do not get even that. If at all there is any difference, it is in favour of the tenants in Malabar.

The Chairman: Have you read the terms of reference? I leave it at that.

11008. *Rao Bahadur Muniswami Nayudu:* Have you visited the agricultural middle school in Malabar?—Yes.

11009. It is doing good work?—Yes.

11010. Do you think there is a demand for education from the agricultural classes?—I think so.

11011. You think if the school were located in a more central place it would attract a larger number of students?—Certainly.

11012. You think there should be a school in every district of the Presidency?—Yes.

11013. *Sir Ganga Ram:* Supposing you grow cotton this year, would you grow cotton next year?—Cotton is newly introduced in Malabar; they were not cultivating cotton before.

11014. When you sow cotton this year, you will sow cotton next year also?—Yes.

11015. Cotton after cotton?—Cotton, and then sometimes millets. There is no system of rotation.

11016. Cotton after cotton?—They do according as they like. I do not think they do anything systematically.

11017. You do not guide them as to what crops to grow?—We lease the lands and the tenants do according to their wish.

11018. *Dr. Hyder:* In reply to question 24 you say that the existence of numerous sub-tenures is always a great hardship to owners of agricultural lands in respect of carrying out improvements and that they are at present prevented from carrying out improvements. I ask you to turn your attention to the other side of the shield also. I put to you the question whether there are any factors tending to discourage cultivators of agricultural land from carrying out improvements in Malabar?—The only factor that prevents them from doing so is the want of money. I do not think there is anything else because on redemption the law allows them more than what they have spent. They get not only what they have actually spent but they get also a portion of the value of the improvements.

11019. I was wondering whether you, knowing intimately the circumstances of tenure in Malabar, think that the *Verumpattamdars* put all their energy and resources into the cultivation of land in view of the peculiar circumstances of tenancy in Malabar?—There is nothing at all to discourage them from putting their resources into land. On the other hand they have every facility because the landlord allows the *Verumpattamdar* the right to improve the lands according to his own wish and he is entitled to be compensated before he is turned out.

11020. Is it not a fact that the *Verumpattamdar* is threatened with ejection from the land every year?—In some cases it may be because the land is given for only one year. If he pays his rent properly there is no trouble. But in some cases he is unable to pay because of the very high rate of

interest he has to pay for getting seed, cattle and other things and at the end of the year he finds, owing to some adverse circumstances or other that he is not able to pay the moneylender and the landholder and then he has to go.

11021. Do you think it is a good system under which the industry, the chief industry of a whole district is carried on, by a system of yearly leases and sub-tenures to which you were referring?—Though they are leases for only one year, they are not generally disturbed every year. There are instances where families have been in possession for 50 years and 100 years and they are never disturbed unless they become defaulters.

11022. Is it a fact that when the coconut plantation is about to bear fruit the *kanamdar* or the *janmi* comes to the tenant and says " Either you get out or pay an increased rent "?—It is not a fact.

11023. *Dewan Bahadur Raghavayya:* You say that a special staff for granting loans under the Agricultural Loans Act and the Land Improvements Act is necessary. Do you mean that special revenue officers should be appointed to push the work of granting loans or that the work should be done by the other departments of Government?—As long as the ryots are able to get the money easily it does not much matter who is in charge of it. Each system has its advantage. If it is the revenue officials they can easily get back the money along with the assessment. If it is the Agricultural Department they can say what money should be given and for what improvements. But I think the advantage will be to have the revenue officials in charge of it.

11024. At present the delays are mainly due to the multifarious work which the revenue agency has to do?—There is plenty of scope for a special staff for that.

11025. I gather you are in favour of legislation to prevent the fragmentation of holdings. You have put forward one method of conoslidation. Assuming that another method of consolidation is found to be better, do you think that legislation to prevent fragmentation and to effect consolidation on an economic basis will be a popular measure and will not be resented?—I do not think it will be resented.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Tuesday, the 16th November, 1926.

Tuesday, November 16th, 1926.

COIMBATORE.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.
Sir JAMES MACKENNA, Kt., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU, C.S.I.
Rao Bahadur B. MUNISWAMI NAYUDU GARU.
} (*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH.
} (*Joint Secretaries.*)

The Hon'ble Mr. H. TIREMAN, I.F.S., C.I.E., Chief Conservator of Forests, Madras.

Replies to the Questionnaire.

QUESTION 19.—FORESTS—(*a*) Yes, except that more use might be made of them for the supply of fuel. Please see reply to question 19 (*b*).

(*b*).—(1) *Firewood.*—The supply could be largely increased by the formation of plantations. It is almost certain however that such plantations would be worked at a loss if they were formed and worked by the Forest Department owing to the cost of supervision. It is possible but doubtful that plantations would be a source of profit if formed and worked by the Revenue Department helped in technical matters by the advice of forest officers, as the ordinary revenue establishment might possibly be able to supervise the working with the aid of low-paid special establishment. My reason for saying that plantations would be worked at a loss is that the ryot is not willing to pay a price for the firewood which would cover the cost of formation and working.

The real remedy would seem to be to persuade the people to grow firewood plantations of their own. I believe that in the prairies of Canada and the United States of America a very considerable area of private woodlots has been created as a result of Government propaganda, and this could equally well be done in Madras if the people could be persuaded to undertake the work. It is a big 'if' however in this country and I very much doubt the utility of such propaganda.

(2) *Fodder.*—The only means which occurs to me is the growing of fodder crops. This is a matter for the Agricultural Department, and is one on which I have no knowledge.

(*c*) If agricultural soil is meant I should say not to any appreciable extent in this Presidency, but I have not much experience except in the western

districts. In the tracts where deterioration of forests has been greatest the rainfall is comparatively light. In the tracts of heavy rainfall the forests are fairly well preserved except in the Agency and in parts of Malabar where forests are being ruined by shifting cultivation.

If forest soil is referred to there has been considerable erosion in the private forests in Malabar owing to over-exploitation of timber, and I believe this has also occurred in the Agency owing to shifting cultivation, but I have practically no personal experience of the Agency tracts.

(*d*) Whether forests increase the rainfall or the supply of moisture is, I believe, still a doubtful point. The question has been under investigation for years in various European countries, but I am not up to date regarding the results. There can be no doubt that forests regulate the supply of water in the soil, and hence in canals, but there are not many localities in Madras where action is a matter of practical politics. I believe that for political reasons it is difficult to interfere to any extent with the practice of shifting cultivation in the Agency though this is being gradually regulated where the forests belong to Government. Much damage has been done to the *sholas* (strips of evergreen forests alongside streams) on the Nilgiri and Palni plateaux by the practice of annually burning the grass on the hills. This is now however being regulated and I have recently ordered the preparation of a scheme of afforestation in the Nilgiris with a view to replacing the burnt out *sholas* by new tree growth. The work is easy and its extent is only limited by the amount of money Government are willing to spend. At present there is very little money to spare.

(*e*) I have dealt with this in my reply to question 19 (*b*).

(*f*) From grazing *per se* I should say not to any appreciable extent. Considerable damage however is done, especially in Guntur district, by hacking branches off the trees to feed the cattle. The only remedy is restriction of grazing which can be brought about only by reducing the number of cattle kept by the ryots. Whether this is practical politics, however, is not within my province to say. I doubt it.

Oral Evidence.

11026. *The Chairman:* Mr. Tireman, you are Chief Conservator of Forests in the Presidency of Madras?—Yes.

11027. You have put in a note of the evidence which you wish to give before the Royal Commission, and which is to be read, I take it, in conjunction with the memorandum supplied by your department for the Commission at an earlier stage?—Yes.

11028. Would you like to make a statement of a general character or shall I proceed to ask you one or two general questions?—I should like to make a short statement, if I may. There seems to be an impression abroad, I do not know whether it is shared by the Members of your Lordship's Commission, that certain matters which, in my opinion, pertain chiefly to agriculture, such as the improvement of grazing grounds, growing of fodder crops and making of manure, are matters which largely concern the Forest Department. If I am correct in thinking that this impression does exist, I think the reason for it is the fact that in this Presidency particularly, and, I think, to a certain extent in the rest of India, there are large tracts of land which are called forest reserves, but which are really nothing more or less than grazing reserves; they are called forests merely because they have a few trees on them. When they were reserved, I think I am right in saying that there was no Agricultural Department, or it was a very small one. That was 40 or 50 years ago; and in the absence of the Agricultural Department the Forest Department was naturally the one which was considered most suitable to administer these big tracts. These grazing grounds were very largely in the public eye and their administration and management was considered as one of the most important duties of the Forest Department. I think we managed these areas fairly efficiently, but the fact that we had to pay so much attention to them led to the neglect of what in my opinion is our legitimate duty, that is the looking after and administration of the big timber forests of which in this Presidency they are very considerable areas of very great potential value. I have broken away from tradition in this matter and got Government to sanction a proposal of mine to transfer very considerable areas of the tracts I am speaking of to the Revenue Department to be managed by panchayats working under the local Collectors. We could no doubt go on administering these lands, but it is not our job; the forest officer's job is the job for which he has been trained, *viz.*, the management chiefly on commercial lines of the valuable large timber forests. You have now got an Agricultural Department, and, if I might suggest, instead of looking to the Forest Department for the administration of such tracts, improvement of the grazing grounds and the like, such matters should be considered as part of the duty of the officers of the Agricultural Department who must know considerably more about the subject than the forest officers do. There is just one more thing I would like to say. I do not know whether it is realised by your Lordship's Commission, that in this Presidency, where the really big forests exist, they are not of very great help to agricuture, because there is not much agriculture there; they are mostly in out-of-the-way places, chiefly on the West Coast. In tracts where I take it agriculture is most important there are no real forests. The position is therefore very different from what it is in Europe where you may have agriculture all round a timber forest and where that timber forest can be of great help to agriculture. With all the good will in the world the Forest Department cannot really be of very much assistance to agriculture in this Presidency.

11029. We are very grateful to you for that statement; it clears up the position. Is that all that you wish to say?—Yes.

11030. How soon do you expect this process of handing over what in fact are grazing lands to the Revenue Department to be managed by the panchayats will be completed?—It is rather difficult to say. I should think there are about 4,000 square miles concerned of which I think we have handed over about 2,000 square miles; I should say the rest ought to be handed over within two years at the most, and possibly within one year.

11031. It is a rapid process?—Yes, quite a rapid process.

11032. Leaving that area out altogether, and turning to the forests which will remain under your department, do I understand from you that the whole of that area will be large timber forests?—No. There are two classes of forests apart from the ryot's forests which are going to be handed over; one is commercial forest, which is remunerative, and the other is protective such as you might have seen when you were in the Nilgiris. The forests on the slopes of the Nilgiris and such hill ranges are for protective purposes.

11033. After the transfer to the Revenue Department and the panchayats is completed, will your department still be responsible for certain forests contiguous to agricultural districts?—Yes, the larger forests. The forests we are handing over to the panchayats are those which are only of local importance. We try to draw a line between forests of local importance, and forests of provincial importance; the extent has a great deal to do with that.

11034. As regards forests of local importance, as you describe them, I take it that the services which the Forest Department, I will not say gives the agriculturist, but which the Forest Department controls so far as the agriculturist is concerned are those of grazing, grass cutting and fuel cutting?—Yes, and such things as thorns for fencing.

11035. Thorns for fencing, certain wild fruits and so on?—Yes.

11036. Now, is it your view that there exists at this moment a sufficiently sympathetic touch between your department and the Agricultural Department as to the services which the forests can render to agriculture in the respects I have mentioned?—As far as I know, yes. But I would like to ask Mr. Anstead what he has to say about it. From our point of view, we are only too willing to do all we can to help.

11037. So that on those essential points you have not so far consulted Mr. Anstead?—I am in rather a peculiar position; I have just come back from five months' leave, and I wrote my preliminary statement just before going on leave. I sent it to Mr. Anstead for his views, and he has kindly given them to me, and they are printed together. But I have not seen him since until just now, so that I have not really had time to consult him on the subject.

11038. That was activity consequential upon the news of this Commission's existence but before that you have not had a meeting round a table to discuss with the Agricultural Department whether any further service could be rendered to agriculture or cattle improvement by you in the Presidency?—We have not had any regular formal sitting-down meeting, but Mr. Anstead and I have often discussed matters of that sort.

11039. Do you think it would be helpful in this Presidency if some of your young officers who have a taste in that direction were attached for quite a short time to the Agricultural Department in districts where agriculture and forestry are contiguous and in a sense mutually dependent, so that they might see matters from the agriculturist's point of view?—I do not think it would be of any practical use.

11040. You do not think it would be of any good?—No.

11041. As regards the more important forests, the commercial forests, do there exist in this Presidency areas of large forests to which herds of cattle or buffalo are taken at certain seasons of the year and grazed by those who make a profession of that work?—Yes; they are chiefly in the dry districts towards the East; Guntur is the chief district where such grazing takes place and the grazing there is grazing of cattle which are used by the cultivators in the deltas; during the cultivation season there is no grazing available in the deltas and they send them to the uplands.

11042. There is thus a further bond of interest between the cultivator and the Forest Department?—Yes.

11043. Do you control areas in which such grazing is or is not allowed?—We do.

Hon'ble Mr. H. Tireman.

11044. You do that according to the age of the timber and other factors of that sort?—Those forests are all more or less poor things; as far as I can see there is not much chance of our ever making much out of them commercially; we just control the grazing more from the point of view of the quantity of grazing available.

11045. So that, there your function is more agricultural than forestry?—It is.

11046. As regards timber forests of commercial importance, is there grazing in those areas?—Not very much.

11047. To a certain extent there is?—Yes, but there is no problem as a rule; it is very easily managed.

11048. Have you areas in which you allow grazing in certain seasons of the year but not in others?—Not very much as far as I can remember.

11049. Are there any areas where grass cutting is allowed but not grazing?—Yes; but in almost all areas grazing is allowed; the chief places where grazing is prohibited are fuel coupes, that is to say where fuel has been cut and coppice growth is coming up we keep cattle out for a few years. But apart from that there are very few areas that are closed to grazing altogether.

11050. I see that you suggest in your memorandum that something might be done to encourage the villagers to plant trees?—Yes, I suggest that that would be a solution of the fuel difficulty.

11051. Are you thinking there of belts of trees as well as of individual trees, or small clumps of trees on the cultivator's land?—I was thinking more of a belt of trees, or small clumps of trees, not so much individual trees. What I was thinking about is what has been done in Canada and the United States, on the prairies, where a great deal of this sort of work has been done.

11052. Would damage from domestic animals be difficult to avoid?—Yes, it would be very difficult to avoid it, and the ryots who made such plantations would have to fence them very carefully at first for a few years.

11053. Do you think it is within the financial means of the ryot to carry out that work?—That, I am afraid, I cannot answer; I do not know enough about it.

11054. So that, on the economic side, you are not satisfied that it is a feasible scheme?—I am not satisfied that it is feasible for Government to do it; whether the ryots can do it or not I cannot say; I do not know enough about their financial position.

11055. Of course, the difficulty in all these schemes is that the investor has to wait so long for his return?—Yes, he has.

11056. I gather from your preliminary statement that your department does nothing to cut and make fodder as a famine reserve?—No.

11057. Has that never been done in this Presidency to your knowledge?—Yes, it has been done, not as famine reserve, but it has been done when famine or scarcity of grass has occurred.

11058. Not as a reserve?—I do not think so; I cannot remember any cases where it has been done.

11059. Do you happen to know what practices exist in other Presidencies or Provinces?—I have no exact knowledge, but I believe they do something of that sort in Bombay.

11060. Are there large areas of grass where, provided you were given the means, you could make important stores of preserved fodder?—There are such large areas, very large areas, but I submit that that is work which would be better done by the Agricultural Department.

11061. Instead of you I will say the person charged with the duty?—Yes, we have got any amount of land of that sort.

11062. You know, of course, that there was a fodder famine very recently in this Presidency?—Yes.

11063. Large numbers of the cattle died, extreme hardship being thereby inflicted on the poorer class of ryots?—Yes.

Hon'ble Mr. H. Tireman.

11064. Does it not seem to you unfortunate that this store of fodder should not be taken advantage of so as to insure against the worst consequences of fodder famine?—It does; it is very unfortunate; the whole thing is burnt every year, or wasted anyhow.

11065. Even if there is no famine, such precautions need not lead to complete loss financially because after the fodder has been kept for three years, it can always be put on the market for what it is worth?—Yes.

11066. And a system of constant turnover can be adopted, which leads to at least two years' good fodder being in store at any moment?—Yes; I have no experience of that; I would rather not express any views as to the feasibility of doing the thing for profit.

11067. Has there been much denudation of soil in this Presidency, due to shifting cultivation, or as you call it *kumri* cultivation?—We call it by several names; there has been a great deal of it, chiefly in the Agency tracts on the Eastern Ghats. I have not any personal experience of that country, as most of my service has been on this side of India, but there is no doubt that there has been a great deal of denudation.

11068. Of course, serious denudation is a permanent dissipation of Imperial capital which can never be replaced?—Yes, I agree entirely.

11069. You lose soil for all time?—Yes; it is a very serious problem.

11070. But it is not one with which you have any personal contact?—It is one which we are only too ready to help to stop; it is a political matter chiefly. I am talking about the Agency tracts; there are certain tracts in the east and north of the Madras Presidency which lie on the Eastern Ghats, or below them, which are outside the ordinary revenue districts, and are under special administration. They are peopled mostly by aboriginal hill tribes, and they are accustomed from times immemorial to carry out this *kumri* cultivation, and any interference with it is always liable to lead to rebellion.

11071. Is it the territory between the Southern margin of Mysore and this Province?—It lies chiefly in the districts of Ganjam, Vizagapatam and Godavari, between the Central Provinces and the plains.

11072. Who, in these Agency tracts, is responsible for the control of shifting cultivation?—The Agency tracts are administered by the Collector of the district, who is known as the Government Agent for that particular tract, and he and his assistants administer the whole country; they do their best to stop this shifting cultivation, but it still goes on.

11073. Who advises that officer on the technical forest points?—I do, or the local Conservator of Forests.

11074. Does he ever consult you?—Informally, yes. I have been consulted often.

11075. I ask because in certain districts, this shifting cultivation, although it is not prohibited, is very closely watched and to some extent controlled, always with the idea of preventing undue soil denudation?—We do control it, as much as we possibly can. The Government Agent, in many cases with the help of the Forest Department, does control it to a certain extent, but it is a difficult problem, because the people are difficult to deal with.

11076. Has the practice of shifting cultivation and consequent denudation caused serious silting in the lower reaches of the water-courses?—That is a question which I cannot answer; I have not enough local experience; I think it must be so.

11077. Of course, dangerous practices at the head-waters may bring unfortunate consequences upon the population living on the alluvial tracts which populations are in no sense responsible for the practices in question?—Yes, there cannot be any doubt about it, that silting has been the result of this, because a similar practice goes on in Malabar on the West Coast and there is no doubt that streams have silted up to a large extent.

11078. Do you feel yourself that more control should be exercised over shifting cultivation?—I do.

Hon'ble Mr. H. Tireman.

11079. Have you ever suggested that to Government?—I have, but not with regard to the effect on agriculture or the effect on the low country.

11080. With regard to the effect on agriculture in the whole country, owing to denudation?—I proposed to Government some time ago that Government should take over control of all the private forests in Malabar, for the reason that two years ago there were very heavy floods in this Presidency, and a tremendous lot of landslips occurred in the private forests in Malabar, owing not so much to shifting cultivation as to denudation caused by over-exploitation; it is a distinction without a difference. They were cutting too many trees. I addressed Government on the subject, but Government would not listen to my proposals; I think it involved too much expenditure.

11081. *Sir Henry Lawrence:* What are these private forests?—Practically all the forest lands in Malabar belong to private people, all the slopes of the Western Ghats.

11082. Are they big zamindars or landholders?—Yes, they are called *janmies*. There is a peculiar land tenure in Malabar, and I do not know much about the details of it. The land, in most cases, belongs to the *janmies*, who would be called zamindars in other parts; it is the same thing.

11083. *The Chairman:* Have you any responsibility for forest management in those lands?—No; we can interfere under the Forest Act to a very limited extent.

11084. *Mr. Calvert:* Do they own the trees as well?—Yes, the whole thing.

11085. *The Chairman:* Have you in hand any important schemes for the re-afforestation or planting of areas which are threatened with denudation, so as to prevent scouring?—Yes; there is one such scheme; it is not a very big scheme, and it would not cost much, but it is an important scheme. The scheme is for re-stocking the western portion of the Nilgiri plateau with tree growth, which has been destroyed by continual fires. There has been no case of shifting cultivation up there, but the same result has come about from the practice of burning grass every year. There we have a scheme for re-stocking that particular area with tree growth, as much as we can.

11086. *The Raja of Parlakimedi:* How do you collect the grazing fees? Is it done departmentally?—It is done departmentally; the actual collection is done by the foresters.

11087. Do you have different rates for different animals?—Yes.

11088. Is there much difference between the rate charged for the buffalo and that for the cow?—Generally speaking, buffaloes are charged twice the rate of cows.

11089. What is the reason?—I have not thought much about it, but I suppose it is because they do more damage; they are heavier animals, but I really could not say why.

11090. I suppose they go under the trees and break the branches?—Yes, I suppose so.

11091. Do you discourage sheep-grazing in reserve forests?—That is rather a difficult question to answer, because sheep only graze in the reserves which, I have said just now, are going to be handed over to the panchayats, and because these reserves are going to be handed over to the panchayats, the Forest Department is not worrying itself much about them. So, I cannot say that we do discourage sheep-grazing, but possibly, if you are going to keep these reserves permanently under the control of the Forest Department, we should discourage it to a certain extent. I think sheep-grazing does not do anything like the damage that goat-browsing does.

11092. Of course, I ask that question because sheep do contribute some important manurial necessities for the agriculturist?—Yes. Of course, when I say discourage sheep-grazing, I mean I would discourage excessive sheep-grazing; sheep-grazing in moderation does very little harm.

11093. In forest areas where there is a smaller number of trees, I suppose you have no objection to sheep-grazing?—No objection.

Hon'ble Mr. H. Tireman.

11094. In Ganjam, shifting cultivation is being controlled indirectly by planters from Assam. There is such a demand for cooly labour in Assam, that they have to import large numbers of labourers from Ganjam?—Yes.

11095. Is there not any such industry round about Malabar to control shifting cultivation in the same manner?—No.

11096. There are lots of tea estates here, and labour could be diverted to those places?—The people who mostly carry on shifting cultivation in Malabar are people who do not go to the estates.

11097. *Professor Gangulee:* You referred to the Forest Panchayats in answer to the questions by the Chairman. Has this system of Forest Panchayats minimised the friction between the ryot and the Forest Department?—Very largely indeed.

11098. Do you find that these Forest Panchayats are generally interested in preserving the area under their control?—That is difficult for me to answer, because I have no longer any concern with these panchayats. The matter does not come before me now, and I have got to rely for information on this subject on an officer, who is called the Forest Panchayat Officer, who works under the Board of Revenue; he assures me that in a very large proportion of cases the panchayat people do really take a genuine interest. I would like just to add one thing: in one particular instance which I have inspected several times, a place about 15 miles from Madras, I was astounded at the thoroughness with which these people had taken on the job of improving the forest; they have done it far better than any Forest Department ever could have done.

11099. So you say the system of Forest Panchayats is successful?—I cannot say it is successful, but generally successful.

11100. At least the general complaint very often made that the villagers are rather uneconomical in tapping the resources of the forest area does not hold good?—It is very difficult to say. The Forest Panchayat Officer has told me that in a very large proportion of cases in which the forests have been handed over to the panchayats the people are taking an intelligent interest in them and are doing the work well; but I have only his word to rely on.

11101. Is this idea a new one or the revival of an old idea?—The idea of handing over forests to panchayats started some 12 or 15 years ago; no progress was made for some years. I have been in charge of this in my present appointment, for 3½ years; when I joined it I found there was no progress being made in the handing over of forests to these panchayats. I investigated and found that it was due to the very obvious reason that the panchayat people were forced to pay far more than they could afford. I mean, this system has been going on but only in the last three years has it made any real progress, because I altered the rules altogether, cut down the rates to reasonable rates and immediately the system jumped into popular favour.

11102. Have any steps been taken to educate these panchayats with reference to the economic exploitation of forests?—There again this does not come within my province, but I understand that the Forest Panchayat Officer is doing a great deal of propaganda work and lecturing to the people; he has under him a number of district men who do the same.

11103. In matters of forest economy?—Yes.

11104. *Sir Henry Lawrence:* Is the Forest Panchayat Officer a forest officer?—No; he is a Deputy Collector.

11105. What is his name?—Mr. Viraswami.

11106. Has he had any training in forestry?—He has training in this particular branch of forestry; he was trained by one of the Conservators for a short time; after all, this particular branch of forestry does not require any intensive training. A month or so going about with a forest officer is sufficient.

11107. *Sir Ganga Ram:* When you talk of a particular branch of forestry will you kindly explain what it actually means, about grazing and so on?—There is no necessity for scientific forest management as the forest officer understands scientific management. There are practically no trees to worry about. The

only management required is keeping goats out and perhaps restricting the number of cattle allowed to graze.

11108. *Professor Gangulee:* Perhaps he should know something about the quality of grass grown?—Yes; after all it does not matter much; whether he knows it or does not know it will not alter the quality of grass.

11109. He can, with the Agricultural Department's help, alter the quality of the grass?—Yes, but all that means money.

11110. With regard to fodder, you say in your printed note: 'The only means which occurs to me is the growing of fodder crops.' Do you suggest that the cultivators should grow fodder crops on the lines on which they raise commercial crops?—I would leave that to the people themselves. I do not profess to know much about it; what I wanted to bring out in that answer was that either on their own land or in the panchayat forests they could do it.

11111. Which administrative body levies the tax for grazing fees, the Forest Panchayats or yourself?—Are you talking about forests which have been handed over to Forest Panchayats?

11112. Yes?—They do it. The system is that the rates which they are allowed to charge are approved of by the Board of Revenue.

11113. Subject to the approval of the Board of Revenue?—Yes, as regards the rates and as regards the number of cattle which may graze in any particular area. Those two points are laid down by the Board of Revenue and, for the rest, the panchayat itself has control: it issues permits and so on.

11114. *Mr. Calvert:* Apart from the agency tracts and Malabar, is there any tract in which you think that conservation should be pursued further in the interests of posterity?—Only, I think, on the hill ranges of the Nilgiris and Palnis, because all the other large hill ranges where you could do work we are already doing as much, I think, as is feasible, simply by protection.

11115. You do not think that this taking of free fuel and free grazing is leading to any permanent damage?—Generally speaking not in the forests over which the Forest Department wields control; but about the panchayat forests I should not like to be so positive.

11116. Your Department of course is confining its activities strictly to areas notified under the Act?—Yes.

11117. Outside those areas there are waste lands unsuited to agriculture owing to their being badly eroded or cut up into ravines. Do you think that something could be done by afforestation?—I do not think so; it all depends on whether it is a business proposition or not. Of course it might do good to spend money on planting up such areas and so on, but it would never pay and I do not think that, as far as I know in this Presidency, the area of such tracts is great. We have not any of those extraordinarily denuded areas that you see in the United Provinces. I think the reason is generally that, where denuded areas occur, they are areas of low rainfall. You do not get heavy rainfall; where you have heavy rainfall you get big forests.

11118. Given ravine land of the type lying around Jhansi, would you place that land under the Forest Department or the Revenue Department?—Under the Revenue Department.

11119. Is the Forest Department in Madras undertaking any subsidiary industries?—By subsidiary industries do you mean industries apart from timber?

11120. Something like resin-tapping and so on?—No. I cannot think of anything at the moment except lac; we are just beginning to investigate that.

11121. Is not the local wattle good for basket-making?—I have never heard of its being used for basket-making.

11122. Have you in Madras any suitable material for barrels?—Yes. We actually turn them out; we have got a sort of research station; we have a mill designed on the very latest and up-to-date ideas, working partly on a research scale and partly on a commercial scale down the line here at Olavakot about

30 miles away; there we are trying woods for all purposes; we have had great success so far in this.

11123. Do you find suitable wood for chip-basket for carrying perishable fruit?—Yes, bamboos; in this country baskets are made of bamboos.

11124. Is paper-making possible?—Yes. We have a big scheme under which paper is to be made in the Tinnevelly district out of bamboo reed which makes very good paper.

11125. So you are dealing with this question of possible subsidiary industries?—Yes; we are going on; we are doing a lot of research work at present; we are gradually pushing ahead.

11126. Have you anything to say as to whether goats are a source of loss or a source of gain?—To the community?

11127. As regards damage to your own forests?—I have never thought of it in the light of benefit to the community, but, from the forest point of view, goats ought to be absolutely banned.

11128. *Rao Bahadur Muniswami Nayudu:* In the constitution of Forest Panchayats and in the fixing of rent to be paid in the villages, are you consulted by the Revenue Department?—I regret I cannot answer that question. I have just returned from five months' leave and I do not know whether any changes have been made while I have been on leave.

11129. You were being consulted before you went on leave?—I think so.

11130. May I know if, before you went on leave and before the forests were handed over to the Revenue Department for management, the rent demanded from the Forest Panchayats was more than what you were getting when the forests were directly under the control of the Forest Department?—No. I always tried to fix the rent at about what the net revenue was to the Government before. In some cases the net revenue was a minus quantity, and in these cases a nominal rent was fixed.

11131. Have grazing fees been raised recently, during the last six years?—I am afraid I cannot answer that. There has been so much change of grazing fees during the last ten years or so that I cannot say whether they have been recently raised. I think in one or two districts they have been raised and there they were ridiculously low before.

11132. *The Chairman:* Perhaps you could put in a statement at your leisure?—Yes.

11133. *Rao Bahadur Muniswami Nayudu:* Grazing fees are collected in one lump sum at the beginning of the year from the cultivator on the number of cattle that the man owns and for which he wants licence?—Yes, on the number of cattle.

11134. Do you not consider that it is very hard for the cultivator to be asked to pay the grazing fees in one lump sum?—I do not think so. The amount which a cultivator pays is in many cases as low as three annas per cow per annum; I do not think anybody who can afford to keep a cow or two could reasonably say that three annas per cow per annum is a hardship.

11135. Do you know that a ryot owns not one cow but probably 15 or 16?—If he can afford to own 15 or 16 cows he can surely afford to pay 15 times 3 annas.

11136. I do not mean cows alone; there are the bulls, buffaloes and others and he has to pay 15 times the licence fee in one lump?—I do not see any hardship whatever.

11137. He pays his revenue in four instalments to the Government. Why not grazing fees also?—I do not see any hardship whatever; if he were grazing those 15 cows on lands belonging to private individuals he would have to pay a much higher rate; some of the panchayats are charging Rs. 2 per animal.

11138. Would you consider the question of allowing payment in two instalments, paid half-yearly?—As a forest officer I should prefer that it should not be done in that manner because it is a very difficult thing to collect these fees. The lower they are the more it costs to collect them proportionately. It would

mean more establishment and more cost and there is always the danger, from the point of view of Government, of people failing to pay the rest of their fees.

11139. Do you hold forest conferences with the ryots?—No, we have so little to do with the ryots that we do not do that.

11140. Do your district officers hold conference with the ryots?—I do not think very many nowadays. They used to, but as most of the ryots' forests are being handed over to panchayats for management the necessity for such conferences is considerably less than it used to be.

11141. May I take you to a particular district, say Chittoor? Are there not a large number of forests which are not reserved forests but which are close to villages and cultivation?—I cannot say because I do not know the Chittoor district very well; but I should say that there are considerable areas of such forests close to cultivation.

11142. In connection with such areas do you think that the District Forest Officers should know what the ryots have to say?—There is absolutely nothing to prevent them holding a conference.

11143. Would you advise them?—If it was brought to my knowledge that there was a demand. I think it would be a waste of time if there were no real desire on the part of the ryots. If there is a desire by all means the district officers should hold the conference.

11144. Do you know whether there is a demand for management of forests by panchayat system in the case of the Chittoor forest itself?—I do not know. But it is extremely likely.

11145. Would you favour the proposal of the management being entirely with the Forest Department subject to the payment of rent?—I do not quite follow you.

11146. You know that at Tiruvannamalai there are second and first class forests managed by Forest Panchayats. The control is entirely in the hands of the Forest Department. I want you to say whether you would extend that principle to the forests in other districts also?—I am against it because it means yet another system of management. We have already two systems, control by the Forest Department absolutely and control by panchayats. I am against introducing the confusion which is incidental to another system. I am advised that the system in Tiruvannamalai should be given up in favour of the regular Forest Panchayat system.

11147. So you are opposed to entrusting the people who are living very near the forests, and who have to go there for all their requirements, with the power of managing those forests through their panchayats?—That depends entirely on whether the forest is a forest of local importance or a forest of provincial importance. If it is a forest of local importance it has been, or should have been, classed as such and it should be managed by the panchayat. But if it is and has been classed as forests of provincial importance I do not think that it is right, having regard to the general interests of the public of the Madras Presidency, to leave such forests of provincial importance to the management of local villagers.

11148. You are satisfied that so far as the forests entrusted to the panchayats are concerned they are being managed satisfactorily?—I am not personally conversant with the subject. I am informed by the Forest Panchayat Officer that generally speaking the management is fairly good.

11149. *Mr. Calvert:* Forest conservation is a highly technical subject?—Conservation of what I call forests, not conservation of tracts which the member is talking about now.

Rao Bahadur Muniswami Nayudu: I am talking only of the grazing facilities.

11150. *Sir Henry Lawrence:* The Forest College here at Coimbatore is under your charge?—Yes.

11151. For what class of officers do you conduct your teaching there?—The staff of teachers comprises five, the Principal and four Instructors. The Prin-

cipal and two of the Instructors are members of the Imperial Forest Service. The other two Instructors are members of the Madras Forest Service.

11152. I am asking you what class of officers you are training there?—I beg your pardon. We train Foresters already in the Forest Department; we train them to be Rangers; Ranger is the next higher grade.

11153. Are you training men for direct appointment to the Forest Service?—At present the training is entirely confined to men already in the Forest Service. That is because there was previously over-recruitment of men who were recruited with the dea of working for a short time in the department and then going to the Forest College. Until those men are trained we confine the training to men who are already in the service; after that we shall take people from outside. Perhaps I ought to explain a little further. This college does not only train Madras men. In fact out of 120 men there are only 16 from Madras. It takes men from the Central Provinces, Bombay, Bihar and Orissa, Coorg, Ceylon, Travancore, Hyderabad. With the recruitment of these men I have nothing to do; they are simply sent by those Administrations and we are asked to train them.

11154. Do men go from this college to Dehra Dun?—No.

11155. You do not train any one for the Provincial Service?—No.

11156. That work is concentrated at Dehra Dun?—Yes.

11157. Do you carry out any research work here?—No, not in connection with the college. The research work that we do is of two kinds. One is silvicultural and concerns the methods of growing trees; the other is research into the economic side, that is the quality of timber and that sort of thing. Silviculture is carried out by a special officer. He works under the Conservator of Working Plans. Working plans are, shortly, detailed plans prescribed for the administration of forests for ten years or so. The other research is done in Madras more or less in co-operation with the Engineering College at Guindy; that is research into the economic side of timber.

11158. Economic use of the timber?—Not only timber but minor products such as myrobalans; that is done at Madras.

11159. At what college?—It is done by one of our own officers. He works in connection with the Dehra Dun Research Institute and does testing of timber with the Engineering College. He is chiefly engaged in the collection of information for pushing the sale of timber.

11160. Have you ever tried in your forests the manufacture of manure from Lantana?—No.

11161. Has any research been made?—Some French gentlemen spent a good deal of money in working out a scheme for utilising the oil from Lantana in Coorg; but as far as I know nothing has come of it.

11162. There was a suggestion from the Director of Agriculture that the Forest Department could make large quantities of manure; has that been ever tried?—I am very much against trying it, because my officers are not trained to that sort of work and we have not yet got our timber forests working really efficiently.

11163. You do not foresee any difficulty in officers of the other Departments entering your forests?—No, no.

11164. Would you agree to have that work done by others?—Yes. My point is that forestry is a highly technical subject and it is waste of time to put a man trained for three years in forestry, at large expense, on to carry out works such as you suggest when there is any amount of real forest work to be done.

11165. There is serious annoyance to the forest and the villagers where forests harbour noxious plants, like Lantana?—In some cases Lantana is gradually destroying the forests.

11166. And overrun the neighbouring fields?—Yes.

11167. So it is a matter of sufficient importance to take notice of?—Very much so. As far as the Forest Department is concerned the remedy is not

very difficult. In my opinion the remedy is to continue to burn; it reduces the density very much.

11168. Is there any difficulty in burning it?—No; it is fairly easy in the hot weather.

11169. You say your department has been engaged in large timber operations. Do you accept the view of some people that you are becoming the timber merchants of Government?—Not altogether. My object is to show the market and the world at large that the species of timber which grow in the Madras Presidency are really valuable. Hitherto many of them have been looked upon as useless. We are trying to prove the value of these timbers and we have been very successful although we started operations only three years ago. Supposing we can show the world that our unknown timbers are really valuable we might expect private enterprise to come and take concessions from Government.

11170. Can you indicate any success in the work you mentioned?—There are two timbers which, three years ago, were unknown to the trade; in fact I do not think they have any local trade names. One of these timbers we have recently sold at a price which approximates very nearly to that of teak.

11171. What is that timber?—One is *Acrocarpus fraxinifolius*. I do not say we can get teak prices for all of it, but some has actually been sold for a sum which approximates to that of teak. Another is *Polyalthea fragrans*. Two years ago no one had ever heard of it; it had no local name; even the junglemen did not know it.

11172. Have you a very large demand for those timbers?—The demand is very large. Even now we cannot meet the demand from one company alone, the Standard Oil Co.; we cannot meet the demand which exists from that company for making boxes. There are other timbers in which success has been attained, but I cannot give you any details.

11173. Sir Ganga Ram wants to know whether those timbers are fit for railway sleepers?—They have not been tried for railway sleepers, but I should say they are not.

11174. Can you tell us the yearly revenue of your Department for the past few years?—It varies from 48 to 50 lakhs.

11175. What is the expenditure?—That is about 48 lakhs; both expenditure and revenue hover about the 50 lakhs line.

11176. In former years you were working at a loss?—We were working on a very much greater profit; there was a surplus of 20 lakhs or so because chiefly, the establishment then cost very much less; but we shall work at a very much greater profit in a few more years; it is only a question of organising. In this Presidency till recently the administration of ryot's forests which I spoke about this morning was very easy. The forest guard was paid Rs. 8; he is now paid Rs. 25. It was easy, because you had not to invest any money in roads and buildings or anything else; all you had to do was to have a man to collect the revenue. These forests assumed a false importance, and the result was that Government, or the head of the Forest Department, which was then the Board of Revenue, looked to the districts where these forests chiefly grew as their chief source of revenue, with the result that the real forests were neglected. That was possibly all right as long as you paid the forest guard Rs. 8, but when you are paying three times as much, it does not pay.

11177. *Dr. Hyder:* Are these forest guards now under the panchayats or are they under you?—Some are under us, some under the panchayats. I was speaking of these guards in general for the purpose of giving an example.

11178. *Sir Henry Lawrence:* Is your revenue likely to be affected by the transfer of these lands to Forest Panchayats?—No; on the contrary it will improve the revenue, not the gross, but the balance, because these lands were costing us a very great deal to administer, and we can get rid of all the establishment. By the end of last March, although this transfer had only been going on about a year or two, we had saved considerably in establishment.

Hon'ble Mr. H. Tireman.

11179. When you are pressed to reduce grazing fees and other such things in favour of local ryots and it is only a question of conflicting interests of the general tax-payers and of the local residents, you as a rule decide in favour of the general tax-payer; is that a fair way of putting your policy?—I do not decide it; the fixing of grazing fees, etc., does not rest with me, but with the Government; they, I think, have been a little too lenient in the matter.

11180. Lenient to the local residents at the expense of the general tax-payer?—Yes. There is a great deal to be said on both sides; we have never really tried to improve the ryot's grazing grounds.

11181. In the note of the Director of Agriculture which you have seen, it is suggested that forest officers should be in charge of these reserved forests on the ground that the local people possess no expert knowledge of either forestry or agriculture. You do not accept that view?—No; I do not, because as I said before, the forest officers are trained for a particular purpose and not for that sort of work; my point is that the training that is required for the administration of the forests in question is a thing which can be acquired by any intelligent man in two or three months; it is quite a different thing from training in real forestry.

11182. Then the Director of Agriculture has also made a suggestion that the Forest Department might assist in matters of silage, and in growing seeds for *kolinji*, wild indigo, and *daincha*. Do you consider that you have any staff available for carrying out that kind of work?—No. We have not.

11183. Do you wish to have that staff?—No; because that staff is bound to cost us a lot. I do not know whether it will cost the Agricultural Department more or less, but it certainly will be inefficiently supervised by the Forest Department. It would be quite another matter if you had such operations as silage making and other fodder operations alongside big timber forests, but most of these places are hundreds of miles away from our real forests; that means imperfect supervision on the part of the superior officers and therefore increased cost. I do not know much about the details of the posting of agricultural officers, but I should imagine that the agricultural officers would have to be more or less on the spot to be able to supervise that. I do not wish to be understood as in the least antagonistic to the Agricultural Department; we are ready to help them in every possible way, except by putting on our trained forest officers to do work which in my view they are not trained to.

11184. You are in close touch with the Agricultural Department?—I think I may say so.

11185. Do your officers work without friction?—We have very little to do with the Agricultural Department. When you asked me whether we were in close touch, I took it that you asked me whether I was in close touch with Mr. Anstead. As a Department we are not in close touch; we have generally very little to do with the Agricultural Department.

11186. You think it is a duty which should be performed by somebody else?—Yes.

11187. If it is to be performed by the Agricultural Department the officers of the Agricultural Department will be working in your areas. Would it be possible to work without friction?—Certainly it would be possible. If there were frictions Mr. Anstead would inform me and I could see that there was no friction. I think that sort of friction is absolutely unnecessary; we are ready to give every possible help.

11188. Quite so; I see your position. The only question is what is the best system. If you can work in concord, then the object will be attained. You are prepared to see that that is done?—I am.

11189. *Sir Ganga Ram:* Have you made any researches into the products of your forests such as examination of trees for the making of wood pulp, chair-making, etc.?—We do not do much research here in this Presidency; such research is done at Dehra Dun.

11190. But have you any product in your forests fit for the manufacture of wood pulp?—I believe no feasible scheme has yet been worked out for India.

for making wood pulp to be used as paper. But we have got a scheme under which private enterprise is now negotiating with Government for the right to use a reed (a small bamboo) for paper making.

11191. Is that a product of this Presidency?—Yes.

11192. Have you any other product; say a product for basket-making?—Basket-making is a thing which has never occurred to me, because it is a cottage industry, or rather the jungleman's industry.

11193. We want to find some subsidiary occupations for the agricultural classes, and what I ask you is, can you suggest any product of your forests which will lead to the establishment of a subsidiary occupation of that kind?—I cannot, because the real forests where such material grows are far removed from the agricultural people. About these subsidiary industries, I may say wherever the agriculturists live near forests, *e.g.*, in South Kanara and Malabar on the West Coast, there is employment of that sort, making baskets, etc.

11194. Do you grow pine trees?—There is a plantation of pine trees at Kodaikanal on the Palni hills.

11195. Do you make any use of pine?—No.

11196. Pine trees are imported from America for ceilings; have you any timber to suit that purpose?—These pine trees that we grow are absolutely useless, because they grow on hill tops and they cannot be got at. But as regards the imports of timber into this country, which amount to some crores of rupees in value, we in the Madras Presidency can supply every stick of timber that is imported.

11197. Do you import a large amount of timber into Madras?—No, we do not; I was speaking of the imports by the trade.

11198. What part of it can you supply?—Everything; every part of it.

11199. You can supply all that demand?—The timbers that I have just mentioned are found to be very good for making boxes; there are other timbers that are good for construction, which we can supply.

11200. Is there manufacture of planks in this Presidency?—The timber industry is undeveloped; there are a few mills down on the West Coast.

11201. Is there any timber which is fit for making matches?—Yes; many kinds of it.

11202. Have you supplied them to people here?—Yes.

11203. Is there any match factory here?—There is a small cottage industry in matches.

11204. What timber have you got for matches?—The silk-cotton tree, which is a common tree on the West Coast; and there are several others. But that is not my special line, and I cannot tell you much about it; but there are plenty of them.

11205. I suppose they could cut them?—Yes.

11206. And you would have no objection to giving them?—No. The difficulty about matches at present is to obtain enough timber of suitable species within a reasonable distance of your factory. It is a very different thing in Sweden; you have got your factory at a certain place and all round it are large forests which contain only one kind of timber. In this country you may have a factory but may not get in the surrounding forests more than one or two trees per acre of suitable species.

11207. When the monsoon fails, do your forests suffer too?—No.

11208. It has no effect?—Are you talking about big trees?

11209. Big or small; when the monsoon fails does your department suffer in any way?—No.

11210. Out of your income, can you say how much is due to the old forests, and how much is due to your exertions or is the product of your industry?—The great majority of the income is derived from the primeval forests, not from the forests we created.

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11211. From old forests?—Yes.

11212. *The Chairman:* Your exertions are almost creative of new trees?—We do a great deal of it.

11213. *Sir Ganga Ram:* Have these Forest Panchayats any civil or criminal powers?—That I am afraid I cannot say, because, before I went on leave, the whole thing was more or less in the melting pot.

11214. In whose hands is the responsibility for counting the number of cattle? Who makes out the bill for the grazing fees? Is it the forest guard?—It is not done quite in that way. A man comes and says "I have 25 heads of cattle, I want 25 permits." Then he goes and grazes his cattle. The forest guard comes into the forest and checks the number of cattle which are being grazed with the permits; they are not counted beforehand.

11215. Supposing, instead of 25 cattle the man grazes 35, has the forest guard the authority to interfere?—It all depends on the arrangement which he makes with the forest guard, but according to the book the forest guard is supposed to prosecute him, or rather to report him.

11216. Or allow him to go, on receipt of some commission?—That is illegal gratification; he is not allowed to let him go.

11217. In your reserved forests, do you allow the people to collect leaves of trees for the purpose of manure? Supposing they take away the sweepings of leaves of trees, would you allow it?—Not as a general rule.

11218. You would have no objection to that?—I would have an objection: it depends on the local circumstances entirely. On the West Coast, in South Kanara and Malabar, where rainfall is copious and the growth is very fast, the people are allowed to take as much manure leaf as they like. This does no harm in my opinion; but I am a heretic in this respect, and some other officers do not agree with me. But in the dry districts, if you collect all the leaf on the ground, your forest will very soon die out.

11219. Do you suffer from incendiarism?—Yes.

11220. Do they do it for mischief?—Yes, for mischief, or having a grudge against the forest officer.

11221. Can you suggest some trees which will grow on the borders of fields, very easy growing trees, which will supply the cultivator's requirements?—I think *Casuarina* would be the best in this Presidency; it gives the best return, and is quick-growing; possibly some species of Eucalyptus might be tried.

11222. Have you encouraged any ryots to grow them anywhere here?—It does not come within my province to do so.

11223. I do not understand the meaning of shifting cultivation. Can you explain it?—It is known all over the country by different names. It is called "*podu*," "*kumri*," etc.

11224. People can go anywhere into the forest and cultivate?—They go into the forest, cut down trees, and they grow one or two crops possibly, and then go off to another place, and start over again.

11225. Are there any areas in this Presidency which require afforestation?—A certain amount, as I said before, should be done in the Nilgiri district, on the Nilgiri hills, and the Palni hills.

11226. Is it not very necessary to afforest them, because they contribute to the floods?—Yes. Not a very great deal is required, because the grass, to a certain extent, holds up the water, but a great deal of damage has been done during the last 100 years by the practice of burning the grass annually; the strips of evergreen forests which grow alongside the streams are spoiled by these fires, and in many cases have been entirely destroyed.

11227. What remedy do you suggest for the purpose of retarding the velocity of the water flowing down?—Planting suitable species of trees.

11228. Would you not terrace them in order to have some cultivation?—that would be a superhuman work; you are dealing with enormous areas.

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11229. Supposing a man asked you to give him the land for that purpose, would you give it to him?—If he promised to do it.

11230. If he asked for land to make terraces on the bare hills, would you give it to him?—If there were some arrangement, by which we could enforce our conditions, certainly I would be very much in favour of granting the permission.

11231. I understand there are waste lands in this Presidency; do you look after them?—No, the Revenue Department looks after them.

11232. Is there nobody to take any steps to afforest them?—No.

11233. Are they not contributing towards floods, if they are left alone like that?—Yes, to a certain extent I suppose they are, but it is not very serious.

11234. *Sir Thomas Middleton:* You have alluded to the great need for supplying village fuel reserves. Would there be any difficulty, from the technical point of view, in making out a list of suitable species of trees for such reserves in any part of the Madras Presidency?—No, there would be no difficulty.

11235. Even in the driest tracts, you can provide suitable species for fuel reserves?—Yes.

11236. Under the most favourable conditions, in your best climates, what rotation would be necessary to give you a good fuel supply?—How many years would be required?—Casuarina can be grown on a rotation of 7 years, that is under expert care and constant attention. I do not suppose you can do this on a large scale however; say 12 or 15 years.

11237. From 7 under the best conditions up to 12 or 15 years under inferior conditions?—Yes.

11238. So that, the difficulty of accumulated interest does not disturb one so much here as it would in the case of European forests?—No.

11239. You referred to the fact that in Malabar there has been too rapid exploitation. I think you said that the forests there are in private hands, and that at present, you have no jurisdiction. Is that so?—Yes.

11240. From the technical point of view, would there be any difficulty in remedying that state of affairs?—None whatever. The west coast is the forest man's paradise. All that you have to do is to throw the seed down, and the forest comes up; it is the easiest thing in the world.

11241. I happened to see some young plantations of Australian trees in that tract yesterday, and I was surprised at the rate of growth. You agree that the technical problems are very simple?—Yes, they are simple enough.

11242. In the case of those forests where you permit grazing at 3 annas per cow, is the supply of grass greatly in excess of the demand?—No; the other way about; the demand for grass is in excess of the supply.

11243. Still, you stop at a charge of 3 annas per cow?—Yes, but we limit the number of cattle which may graze.

11244. *Dr. Hyder:* I am quoting the figures from the Government Order dated the 13th September 1926 relating to the Administration of Forest Panchayats. The total area under the administration of these Forest Panchayats is 1,290 square miles; the number of panchayats working in the Presidency is 623. The fees payable to Government were Rs. 6,000; the grazing fee charged per cow varies from 1½ annas to Rs. 1-2-0. How does the total amount paid and the grazing fee per unit cow compare with the charges which you levied when the reserved forests were in your hands?—The fees differ so very widely from district to district that it is not possible to give you any very definite answer. I think I am right in saying that our fees in forests under the control of the Forest Department vary from 3 annas in the case of a great deal of them to Re. 1 in a very small number of cases. I should say it varies from 3 to 8 annas, generally speaking.

11245. With regard to making technical advice available to these Forest Panchayats, I understand that that has been a failure in the Coimbatore district. Three out of eight were suspended. Coimbatore has a first class Agricultural

College, and I understand it also possesses a Forest College?—May I ask if the three cases you refer to are in this report?

11246. Yes; I am referring to three out of eight panchayats under the control of the Revenue Divisional Officers in the Coimbatore district?—I think you have got hold of something else, if I may say so. That is a case of unreserved lands, I think; it is not the ordinary Forest Panchayat.

11247. Are your Forest Panchayats partly under the Revenue Divisional Officers?—I do not think they have anything to do with the Revenue Divisional Officers at all; they are under the Collector. The panchayats you refer to are some under an old system, which has nothing to do with the Forest Department. I am not sure, but I think I am right in saying that.

11248. My point is this: do you not think that it is desirable that these Forest Panchayats should have the advice of the Forest and Agricultural Departments?—I do not think there is any necessity for these panchayats to have the advice of the Forest Department as such. They have the advice of the Forest Panchayat Officer, under whom works the local Forest Panchayat Deputy Tahsildar as he is called. Those officers, especially the Forest Panchayat Officer himself, have been taught all that is necessary for them to know by senior forest officers. The Forest Panchayat Officer is a man of three years' experience in dealing with these matters, and if he cannot teach the people everything they require to know, then he is not worth the pay he gets. I do not think there is any doubt that he can teach the people everything they want to know. Sometimes it is the other way; the panchayat can teach something to the officer. It is a matter of common sense, and not of any great technical knowledge.

11249. The growing of plants and grasses does not require technical knowledge?—The growing of any plant, after all, is the ryot's trade, he knows how to grow an ordinary plant; it is just a matter of substituting a tree for grass, and some fodder crop or some cereal; it is not a difficult thing for a man who is accustomed from his childhood to grow things. I do not think there is any necessity to get the advice of the more technical forest officer on the subject.

11250. Take the case of the *shola* forest; I understand there has been a rapid deterioration there. Is there any provision under which advice is given to these people?—No.

11251. No advice is given either by the revenue or the forest officers?—No; might I add, if it were given, it would not be acted upon.

11252. Take the case of the match industry; is there any match factory in the Madras Presidency?—I do not think there is anything except as a cottage industry. I am not sure, and I could not be certain about it, but I think the only match factory is one in the State of Travancore.

11253. South Kanara is in your Presidency?—Yes.

11254. In the neighbouring State of Mysore, near about Shivgaon, they are starting a match factory; I imagine perhaps you know whether the timbers available there are of the same kind as in the district of South Kanara?—Probably.

11255. So far, no match factory has been started in this Presidency?—None that I know of.

11256. What difficulty is there? Is it the absence of private enterprise?—That is a very big question; the absence of private enterprise, yes. Private enterprise being absent it is necessary for the Government to get the timber out; to get timber out of these forests is a very difficult and complicated thing requiring a tremendous amount of organisation; the forests in which these timbers grow, most of them and the best of them, are in very inaccessible places, particularly with practically no roads, or buildings; for seven or eight months in the year there is heavy rain and leeches are bad; the forests are feverish. You can understand that in order to organise work in places like that a tremendous lot of spade work is necessary. We have to lay out roads, we have to build houses for the subordinates and we have to get machinery to work and so on: all that means a lot of expense and the reason why the thing is not organised at

present is that Government has not been able to face the necessary expenditure in the past. We are now doing as much as we possibly can with the establishment at our disposal in organising large scale exploitation of forests with the hope that private enterprise will see that it is a paying thing and come in.

11257. Leave alone the question of machinery and things of that kind. Would you admit that no forest property is of any use unless you have also the provision for the construction of roads? Are you undertaking an active programme of road construction in your forest property?—We are not undertaking any particular programme of roads at present; but we have just drawn up a programme which is going to be submitted to the Government, a programme for the next five years.

11258. These forest roads are under your department. They are not under the Department of Public Works or some other department?—No; under the Forest Department.

11259. *Dewan Bahadur Raghavayya:* I have only one question to put to you. Before putting that I would explain that the class of panchayats to which Dr. Hyder referred are not the Forest Panchayat proper but a few panchayats which were begun years ago and run by Revenue Divisional Officers. They are languishing and they are being gradually transferred to the Forest Panchayat Officer. The question that I wish to put is the very same question which Dr. Hyder put to you. May I ask you to consider that question again about the need for technical advice, co-operation of the Forest and Agricultural Departments by way of offering technical advice to the Forest Panchayat Officer and his staff in the matter of working these Forest Panchayats?—The present Forest Panchayat Officer and his staff stand in a somewhat peculiar position, do they not? The present Forest Panchayat Officer was trained by you for two years or so and his staff was also trained by you. But you cannot expect that state of affairs to continue. If the present man goes another man might come, but he will not have the training which the present man has had. I find that the Forest Panchayats are engaged actively in tree planting and that they planted about 33,000 trees within the last year. Do you think that this operation of tree-planting and the operation of introducing exotic grass, or improving the present grass supply in these reserves, should be done efficiently by these panchayats without the staff getting some sort of technical training or at least technical advice through the co-operation of your Department and the Agricultural Department?—As regards grass and the Agricultural Department, I am afraid I cannot answer; I have not enough knowledge of them. As regards tree planting I think the ordinary ryot in planting the trees does as well as the ordinary forest officer, and I think it would be a waste of material to have a regular forest staff to supervise such works. But on the other hand if it is shown to be necessary I should be only too glad to lend the services of a forest officer when and where necessary. But I think to keep a man permanently on work of that sort is waste of material.

11260. What is in my mind is periodical visits by your responsible officers or District Forest Officers to these reserves, and offering of suggestions in regard to the way in which plants should be raised, suggesting the kind of pla.. that should be raised and so on?—It would doubtless do good; but the question is whether it is necessary and whether it is worth the expense.

11261. *Professor Gangulee:* Have you ascertained whether the Railway Department imports any sleepers from outside?—Yes, they import large quantities from outside.

11262. Cannot you supply their needs?—We cannot for the reason which I gave just now, that we are not organised. As soon as we have organised, we can supply every single sleeper required in India.

11263. If there is any merchant you will give facilities?—Only too gladly. Let him come forward; but so far I have not met any.

11264. Have you any method by which you bring your timber from districts to the market or to the rivers, such as tramways and so on?—That is a technical

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matter with which our technical branch, the Forest Engineer, deals. I am afraid I cannot answer that.

11265. But are you aware of any such method?—We have not got any at the present moment.

11266. *Sir Thomas Middleton:* The present Panchayat Officer was trained by you?—Not by me personally, but by one of my subordinate officers.

11267. Assuming he vacated his post, would his successor not also have the same forest training? Is it not a necessary condition?—I think it would be necessary; but the point has not arisen yet.

11268. I inferred from the question put to you by Mr. Raghavayya that there is some danger if this forest officer were to vacate his post that his successor might not have a similar technical training?—The training is a matter of a short time; two months, I think, will be enough.

11269. *Dr. Hyder:* How much pay does this Forest Panchayat Officer draw?—I really cannot say; he gets his pay as Deputy Collector, *plus* an allowance.

11270. Could not your Rangers or Foresters undertake such work?—Rangers could undertake the work quite well.

11271. So it would be a good policy to transfer Rangers to that post?—I do not think that all the Rangers can do the work now done by the Forest Panchayat Officer himself, but there will be one or two exceptions who could do it. For some reason or other Government are opposed to that.

11272. They do not favour the transfer from your department to the Revenue Department?—No.

11273. *Professor Gangulee:* Regarding creative activities of your department do you have any forest nurseries?—Not in the sense in which they are known in Europe, nothing permanent. Our chief creative activity is at Nilumbur in Malabar where we have about 6,000 acres of teak forest. We are planting there and make temporary nurseries as required.

11274. Do you extract tannin?—I do not know.

11275. Is any research carried on?—Not here, but at Dehra Dun.

11276. You mentioned that private enterprise was negotiating with you for the manufacture of paper. Is that enterprise an European enterprise?—I do not know whether I am correct in answering a question of that sort. It is confidential at present.

11277. But private enterprise is negotiating?—Yes.

11278. With regard to coffee and tea plantations, they are increasing in area, are they not?—Yes; the area under coffee is not increasing to any considerable extent; the area under tea is increasing as fast as land can be got.

11279. That would be a serious drawback; it would affect the forest area very much?—If the forest area is not suitable for commercial management for the growing of timber and so on, I would rather see it under tea than lying waste and my policy has been to give all possible facilities for tea growing.

11280. *Mr. Calvert:* Is the Forest Department here Reserved or Transferred?—Reserved.

11281. And this Panchayat Officer, is he Reserved or Transferred?—Reserved.

Dewan Bahadur Raghavayya: As Deputy Collector he is a Reserved officer.

11282. *Dr. Hyder:* The Department of Panchayats comes under the Transferred subject, does it not?—I am sure it is a Reserved subject because it is dealt with by the Hon'ble Dr. Usman Sahib.

11283. *Mr. Calvert:* Both Reserved?—Both Reserved.

11284. I should like to ask whether your department will send us a brief account of the work done at the research station in connection with the utilisation of forest produce for industrial purposes. Will you send us a note on the subject?—Yes.

Hon'ble Mr. H. Tireman.

11285. *The Chairman:* One question. I noticed in Mysore that within a few miles radius there were quite a number of plantations, I think they were Casuarina plantations. Is that right?—Yes.

11286. Do you happen to know whether they are encouraged by the State in Mysore or whether they are private ventures?—I believe that all of them round Bangalore are private ventures. But what the policy of the Mysore State is I cannot tell.

11287. For fuel?—Yes, for fuel. It is a paying business.

11288. Would it be a paying business here?—It all depends on the locality. It is a very paying business in Madras. All round Madras you see the same thing; but I presume it is not a paying business in a district like Coimbatore because we do not see the plantations here.

11289. You think that it does exist where it would pay?—Yes.

11290. You do not think there is anything that you can do to encourage the planting of these trees?—No, I do not think so.

11291. *Sir Henry Lawrence:* Are the plantations here in Madras under the Forest Department?—They are entirely private. Some were originally made by the Forest Department. Some years ago Government announced that they were adopting the policy of giving up all such work.

11292. But the system was introduced by the Forest Department?—I cannot say whether it was introduced by the Forest Department or not. Probably private people also introduced it. I think it was a question of supply and demand.

(The witness withdrew.)

Mr. K. T. PAUL, O.B.E., B.A., National Secretary, National Council of the Y. M. C. As. of India, Burma and Ceylon, Salem.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(c) It is my impression that there is not yet in India adequate appreciation of the necessity for research work along lines of Soil Chemistry and Soil Bacteriology. I was struck by the enormous importance given to this line of work in America and particularly since the War, on the Continent, more especially in the Eastern countries of Europe. This impression was confirmed for me by the Head of Rothamstead, with whom I discussed it in 1919, and compared notes in 1924; and also by Dr. Mann of Cornell University whom I ran across in Prague, 1924. It is my belief that very considerable light will be thrown on the value or otherwise of the empirical agricultural tradition of India when the organic aspects and possibilities of soils are studied. It is high time that this line of research is given the importance that it deserves, alongside, of course, of other lines of research.

I am not a student of science: my observations are those of a student of economics.

QUESTION 2.—AGRICULTURAL EDUCATION.—What is agricultural education for?

(a) For the millions of Indian farmers;

(b) for a staff for demonstration, propaganda and educational purposes (who should be several scores in India);

(c) for securing very high grade scientific workers (who should be few in number).

In a country like India where agriculture is practically *the* occupation of its millions, the only logical way of providing agricultural education in all its grades is to make it absolutely part and parcel of the general scheme of education which is provided for the whole country. The entire scheme of rural education should bear a very strong, I should say highly preponderating, agricultural bias.

In the old days (down to my memory) almost every caste village had its school, the teacher like all the village artisans, etc., being entirely supported by the village itself, payment being in kind. The teacher was himself a farmer, sometimes cultivating himself, sometimes through a tenant. (The Panchmas were outside the privilege of this school.) With the statutory provision now secured for the registering of village panchayats it should be possible to revive the good features of this system. Education would then go to the village child (of both sexes, as indeed in the old days in *South* India) and not as now all the enterprising, well-to-do and intelligent children eventually drawn away from the village. Such a revived rural education, which should as soon as possible, by design, submerge the present plant of rural education, should be biased with agricultural facts and principles.

This in itself should suffice for securing the first of the objectives noted above for agricultural education. The insurance of this lies in the quality of training and attention which the rural teachers get. Provided they are themselves products of an agricultural middle school and their pedagogic training has been related to the atmosphere of such a school, provided they are helped by Supervisors attached to the agricutural middle school, and also provided that as a rule they are themselves farmers, the ordinary rural education of the country ought to suffice for (*i*) giving elementary general knowledge in regard to many aspects of life important to the villager, (*ii*) literacy and (*iii*) a general capacity for receiving and assimilating the further knowledge, theoretical and practical, brought to them by

Agricultural Demonstrators and propagandists, by co-operative organisers, by Health Officers, etc.

Agricultural education, strictly so called, should be a natural outreach from such a rural education. The needs of a Province cannot be met merely by an agricultural college or dozens of agricultural middle schools spotted up and down the country, while rural education is altogether devised as a preparation for something else. The answer to question 2 (*i*) in the Questionnaire is that the institutions and therefore the teachers will continue to be insufficient for India until there is a remodelling of the whole of the rural education and agricultural middle schools arise up and down the whole country at the call of such a remodelled primary education.

May I take the liberty of presenting a copy of the Report of the Commission on Village Education in India, on which I happened to be a member. There are many references to agricultural education in the course of the report but more especially I would invite attention to the proposal for vocational middle school (which should be the main source for the supply of teachers). This idea, it may be mentioned is the father of "Moga" which is now so widely known in missionary educational circles as standing for a new type of rural education.

According to the suggestion in the foregoing paragraphs the ideal would be somewhat as follows:—

(1) One Agricultural college for the Province.

(2) One Agricultural middle school with Teachers' Training section in each taluk. This should be staffed by graduates of the Provincial Agricultural College. Half the duty of the staff will be the supervision of the village schools in the taluk, and regular demonstration work in that area.

(*ii*) This also is implicitly answered by the above remarks. According to my view there would not be any district without one or more Agricultural middle schools to serve the needs of the rural population.

(*iii*) As a matter of fact it is very difficult to draw a line between agricultural classes and non-agricultural classes in India. Almost every one, even artisans like goldsmiths and priests like *purohits* are all indirectly and in some cases even directly concerned with agriculture one way or another. I cannot therefore answer the question as it stands. I would rather say that a farmer should be the rural teacher even more so than a rural teacher being a farmer. In other words, given a thorough remodelling of rural education it should be quite possible in every village to find a man who is actually a farmer to devote a part of his time, not necessarily every day but every season to the running of a small village school. This was pretty much as it was from ancient times till within our memory.

(*vii* and *viii*) I would suggest the Commission to visit and study the experiment carried on at Moga in the Punjab.

(*x*) There is certainly everywhere keen feeling in favour of land as an investment, rather of agriculture as a personal occupation. The "Middle-Class youth" in most cases has his own or family property which is cultivated by tenants. His settled attitude is that of an absentee landlord. If by the question is meant, getting him to take to agriculture as a personal occupation, it is a question of profit and loss, of making it really an alternative to be considered in preference to those other occupations which are now becoming more and more congested. Already we have the fact that Matriculates ("Eligible S.S.L.C.'s") and even college men are turning to farming, some of them in personal labour and some in organising the labour of their tenants or servants. Public opinion in this matter is already showing signs of improvement. If more attention is devoted hereafter to the betterment of rural conditions, the consequent demand it will involve on the services of the middle class youth, their personal interest in agriculture will become fully established. The question then is, how to make Indian Agriculture really pay a decent dividend?

Mr. K. T. Paul.

(*xii*) All the answers to section (*iii*) will serve to answer this sub-section.

(*xiii*) I do suggest that a very courageous attempt be made without any loss of time to extend (*a*) elementary schools in the villages and (*b*) concurrently the education of the rural adults without necessary recourse to literacy. The village schools should be entirely in the vernacular, should cover no more than four years and should carry a curriculum on the lines of the Moga principle. I am enclosing copy of Dr. Mason Olcott's recent book "Village Schools in South India" in which will be found several alternative curricula.

This will imply that a very large number of training schools of the lower and higher elementary grades be organised throughout the land. It will also mean the employment of a considerable number of Supervisors to keep rural education up to standard.

Having provided the necessary preparation in this way, I would expect each village practically to support its own education. There is no reason why it should not, provided the teacher is one of the farmers. It should be the aim of all official and non-official organisers of rural education to secure such an arrangement as fast as it can be managed. The work accomplished by one Taluk Board, Cheyyar, in North Arcot district may be taken as an earnest of vast possibilities in this line.

The administration of such rural education should be mainly or even entirely for maintaining standards for encouraging rural teachers and in no sense should be a censorious supervision to exact work from the teachers. The educational work of the teacher should be really controlled by the educational demand of the parents in the village itself. It is the public opinion of the village that should keep the teacher alert, this public opinion being substantially represented by the perquisites of the teacher from threshing floor to threshing floor. The "Supervisor" (who should also be a Demonstrator) should be part of the staff of the Training Schools and should form the link between the Training School and the village, on the one hand keeping the village school master up to standard and facing the actual day to day problems of the farmer and on the other hand keeping the Training School up to the actualities of current life. The district should have an "Inspector" on its staff to guide and regulate the work of the "Supervisors". The "Inspector" would be the district Demonstrator and the "Supervisors" the Assistant Demonstrators, under his guidance, but still part and parcel of the staff of the middle school.

The financing of the village school should not be charged, eventually, on provincial finance. The village itself should bear all the expenses, capital and recurring. Payment will usually be in kind. The expenses of training, supervision, inspection and general administration, *i.e.*, middle schools, Supervisors, etc., will be of course on a very large scale. Towards this I recommend that money be found by drastically decreasing State aid to secondary and University education. It is quite unnecessary to labour the point that education in India is too top-heavy. The Sadler Commission Report has established this fact beyond any further necessity for argumentation. Since the Sadler Commission things have become worse and not better, and the problem of the unemployment of the educated youth of the country has in recent years become a national problem amounting to a calamity. It is no longer justifiable to expend money out of State revenues to further assist secondary and University education, especially as the bulk of the State revenue is drawn from the rural population. As in most countries the privilege of "higher education" should be paid for in full by those who desire it. The country will be ruined if there is not a continuous stream of men and women with the highest possible University equipment that is humanly possible. But we have reached a stage when this fact is appreciated so widely in the country that it will be paid for by a sufficient number of people to maintain first class standards and sufficient to provide leadership for the real needs of the country. There will of course be highly capable youths who are handicapped by poverty. They ought

certainly, in the interests of public good, to be financially assisted to go through a University course. But such cases will be relatively rare: private benefactions will probably take care of them. Still a limited number of scholarships should be established and awarded exclusively on the dual ground of poverty and merit,—without any distinction of caste, creed or sex. These scholarships should be available for students of every grade, so that deserving boys may be picked up in every stage and pushed along right up to the top.

Such a drastic step as the withdrawal of State aid from higher education could of course be done only in a period of years. So will the needs of the remodelled rural education expand only in a period of years. I would suggest that the former be on a diminishing scale looking forward to entire disappearance, say, in ten or fifteen years.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—We in the "Rural Reconstruction Department" of the Y. M. C. A. consider demonstration and propaganda as fundamentally a process of education; education in theory and education in practice.

Educational opportunity of the sandai.—In India there is a very ancient institution, still absolutely vigorous, which lends itself splendidly to the education of the adult villager. Once every week in a convenient centre the villagers from five to seven miles radius come and assemble as a market. In the Tamil country it is called a "sandai" in Bengal it is called a "hat." Almost every villager, man, woman and child, who can at all physically go, were it only for an hour or two, does make it a point to go to this weekly market. Considerable amount of business is transacted at the market. But it is partly for business and partly for pleasure. Many a person goes there merely to buy the week's supply of tobacco; it is really to meet friends.

It will be obvious that this national institution, ready-made and live, offers a splendid opportunity for educational purposes. Here the educator can touch (*a*) practically everybody on the countryside and (*b*) practically the same set of people every week. In our Y. M. C. A. Rural Reconstruction work we have used this opportunity to good purpose. It is our experience that villagers, men and women, are willing to spend a good deal of time listening to our talks, examining our charts, scrutinising the implements, and asking many questions, intelligent and based upon practical experience. Our Secretaries have secured in this work the co-operation of the Government officials of the Agriculture, the Co-operative, the Health and other Departments.

We advocate that in connection with every one of the larger markets, to begin with, and eventually with every market in India, there be established a centre for demonstration and propaganda, *viz.*, education.

Taking a whole countryside, say two or three consecutive taluks, these weekly markets are so arranged that the professional vendors of cattle, grain, cloth, etc., could conveniently go from one centre to another. If the weekly market is at Centre A on Monday, it is at Centre B on Tuesday, B being say eight to fifteen miles from A. And so every day of the week is occupied, the vendor coming round to A on the eighth day. So it is quite possible for the demonstrator or demonstrators of agriculture, health, education, etc., to conveniently move on from day to day in the same traditionally appointed circuit.

The Farmer-Demonstrator system indispensable.—But there will not be that effectiveness in the demonstration that we desire until the farmer is able to see for himself that what we recommend can be translated into profitable practice in the conditions in which he is condemned to be. The Indian farmer is really very shrewd. He suspects, in most cases rightly, that our demonstration is under conditions so really different from his that it is of really no value to him. His hesitation is due not merely to conservatism but to a disbelief in our practical business capacity. Nothing is economically sound which omits to reckon in any of the conditions actually

entering into the proposition. This difficulty can be overcome only when demonstration is done through selected farmers on their own lands in conditions true to the whole countryside. We recall here the American method of "Farmer-Demonstrators." In close proximity, as close as possible to the site of the weekly market, an intelligent farmer should be persuaded to act as a demonstrator. The department should be willing to devote a great deal of time and attention towards making his farm a model farm. By "model" we mean utilising every implement that would make his practice perfect, using the right kind of seed, the most suitable fertiliser and the most fruitful method of cultivation. But more. His farm cannot be called model until with all such things it is also patently proved to be profitable. It should be of a size average to that area, the farmer should be paying market value for implements, the seeds, etc. He should be using only bullock power, he should in fact be an average normal farmer of the area. If in those conditions the Agricultural Demonstrator with the advantages of his science and superior organisation is able to show distinctly better profits for him, there will be no difficulty whatever in all that is demonstrated there being accepted.

It is within my own experience (I am a farmer myself) that *kichilisamba*, one of the paddy seeds recommended by the Coimbatore College has become very popular among the ryots of Salem district, because it was proved by actual experiment to produce better outturn and also to be free from the ordinary diseases of paddy. We may take a leaf from the sister occupation of weaving. Some thirty years ago Government established a weaving centre in Salem for inducing the weavers to adopt the fly-shuttle loom. Salem had at the time about thirty thousand individual looms. But the number of those who adopted the fly-shuttle method was negligible, and the school was removed to Madura, abandoning Salem as hopeless. Within a year from that date hundreds of weavers in Salem had of their own accord introduced the fly-shuttle. What was the difference? This. The Government School recommended the Churchill loom which meant a frame and accessories costing something like Rs. 75. Meanwhile the Salvation Army said to itself, "Why the frame?" The weaver digs a pit for himself and so nature provides the platform. All the improvement necessary is a fly-shuttle. And so the Salvation Army devised a loom called "The Poor Man's Loom," which costs only Rs. 10. Some Salem weavers visiting relatives seventy miles away had noticed it, learnt it and on their return introduced the improvement in their own looms. Their neighbours saw it and adopted it rapidly with the result that within a few months after the Government School had ignominiously retreated, one could walk through streets after streets of Salem and hear continuously the music of the fly-shuttle through every window.

Pamphlets are of no use, because of illiteracy. Lectures, films and charts create interest. They do certainly have some effect. But the actual translation of interest into action will take place, and take place very rapidly, if and when the Government Demonstrators are bold enough to challenge that their practice, without any advantageous conditions, does produce greater profit.

QUESTION 4.—ADMINISTRATION.—(*a*) Agriculture is the essential industry of India. It ought to be lifted out of all dangers arising from the fluctuations of finance and personnel incidental to party system in all countries. Germany has a telling example in this respect. The War ruined German industries and commerce: on top of it came the colossal debt to clear. The new Republic was threatened momentarily by the undoubted elements within the populace of Bolshevic extravagance and Monarchic reaction. Politics was in the hands of ten parties. If in these conditions Germany has been making very steady economic progress it is because, very early in the game, learning from the War experiences, it appointed an Economic General Staff, to take care of all "essential industries," and freed this department of the State from all interference from the party in power, whichever it might be. Universal acceptance was forthcoming because of

the palpable fact that there was no shadow of a possibility of recovery for ruin and bankruptcy excepting through an absolutely relentless programme of reconstructing all essential industries.

Agriculture and elementary education are of such essential importance for everything else in India, that universal willingness should certainly be forthcoming for a similar arrangement. A certain percentage of revenue or the revenue from certain sources ought to be severely earmarked for these purposes as irreducible minima. This should apply to Imperial as well as Provincial Revenues. The principles of administration should be laid down and from time to time revised by a Central Board consisting of a majority of 'experts' a minority of others, with a limited number of co-opts. It should be a part of the responsibility of this Board to determine the irreducible minima to begin with and to revise it from time to time. Otherwise, the Central Board should have no executive functions not even with reference to the Agricultural Department of the Government of India. Indian States which are willing to accept some conditions should be welcomed to join in the Board. The details of administration should be in the Province. With the continuous education of public opinion regarding relative values, it is to be expected that the Provinces will feel the necessity to expend far more than the minimum indicated.

The service of the Government of India should be toward:

(*i*) Upstream technical research, not necessarily all in a Central Institute like Pusa, but in collaboration with Provincial Colleges. Still, if high grade research is to be maintained, not merely from the local utilitarian view point but also in the interests of pure science (which is so absolutely necessary as ensuring true and continued progress in the art of agriculture), the Government of India must maintain a first class Research Institute, which will also provide the opportunity for training Indian agricultural graduates of adequate previous preparation and proved aptitude for advanced work. Surely India ought to afford one such Institute in the interests of her national profession. The value of such an institute should be not only in the work done there, research and training, but also in the real prestige it bears in the scientific world. In other words India cannot afford to have anything in this way but what is absolutely first class. If it cannot be first class, let us not have it; let us be content with the work of the Provincial Colleges.

(*ii*) Industries subsidiary to agriculture in their pioneering stages, chiefly where inter-provincial collaboration will be profitable, or where attention to conditions in foreign countries is necessary. Assistance to such will be as called for by each case.

(*iii*) Determination of the Principles of Progress, through the Central Board.

It is understood that recruitment to higher posts, and of experts will be the various Public Service Commissions.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—

(*a*) (*i*)

For food and clothing For fodder For renewal of work-cattle	In the bad years.
For repayment of prior debts For marriages and such domestic ceremonies For litigation	In the good years.

In the bad years it is sheer necessity. In the good years the ryot is a victim to others, moneylenders, impecunious relations, law-sharks.

(*ii*) His source of credit, even with all the spread of the Co-operative Credit Banks in this Province, is still the usurer whose direct interest is against the ryot discharging his debt quickly.

(iii) Once in the grip of debt, the ryot seldom gets relief to the end of life, mainly because of his own ignorance and easy credulity which place him practically at the mercy of the creditor.

Another reason is that he seldom, if ever, has a margin above bare necessaries, to meet debts with their rapidly mounting interests. Whatever margin he might have is swept off into the pockets of middlemen, who can wait to sell, whereas the ryot can never wait till prices rise above the minimum to which they always sink during the temporary glut of the harvest season.

(b) Every form of law can be subvented by the usurer and his vakil; so it looks. In the pre-British days the moneylender was in wholesome dread of the countryside, which he could ill afford to over-irritate. The strong arm of law now protects person and property from those who might be inclined under provocation to take law into their own hands. Duplicity has here the advantage over the long suffering honest ryot who is often driven to bitter despair. One remedy is in the administration of law. The old habit of village panchayats should be revived; the Co-operative movement and the new Panchayat Act are already assisting in this respect. Through the village panchayat the public opinion of the whole village should be brought to bear constantly on the professional moneylender. Where cases pass beyond the village and go to the twon, *Munsifs* should be encouraged to go far enough into cases to discover the equities and commit them to appoint panchayats for adjudication. In criminal administration we have Juries: in regard to debt and interest, we should have panchayats appointed by Court, whose decision should be binding.

Otherwise I would leave contracts free. I would trust to adult education, elimination of middlemen, the increase of earning power through better cattle, better farming and better organisation, and the rise of self-respect in the mind of the ryot.

QUESTION 8.—IRRIGATION.—(a) I have most earnestly to urge that exhaustive consideration be given to the situation in Salem district.

(i) Unlike most other districts Salem has no good river traversing it: the only one which may be called large is the Ponniar, which however, very seldom brings any water down. The Vaniar and the Vellar become good after they leave Salem: any decent scheme to tap their upper reaches is pre-empted because of the large irrigation interests already vested in their waters below Salem.

(ii) Among all the Tamil districts Coimbatore and Salem are the most liable to famines. Of these Coimbatore is better protected with such good rivers as the Bhavani and the Noyal, and its 391,300 acres commanded by perennial wells. If Salem has far fewer wells it is due to the worse geological conditions of its subsoil.

(iii) The standard of Government is that 0·4 acre per head of the population should be protected in a district in order to insure it against famine conditions. On this standard Salem has $\frac{1}{10}$th of protection while Coimbatore and Trichinopoly have ⅓rd of protection, and Tanjore has more than this standard protected.

The past four years have been very bad years, and the suffering of people and even more of cattle has been intense. Many thousands emigrated from Atur, Namakal and Trichengode taluks. Early this year the distress in the latter two taluks was very severe.

In view of this I would suggest two remedies.

1. That a share be given to Salem in the Mettur waters. The present proposal is to benefit primarily Tanjore district, and in a measure Trichinopoly and Coimbatore districts. Salem has been entirely left out of consideration. And yet the Cauveri is the only good river in the vicinity of Salem, forming its western boundary. When a gigantic scheme is projected to impound its waters, if no drop of it is to come into Salem district, the very last hope will be gone and it will be perpetually doomed to the present

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condition of precariousness and uncertainty. The following statement will illustrate the comparative claims of Salem:—

	Agricultural and pastoral population.	Area at 0·4 acres per head.	Actually protected now including wells.	Balance requiring protection.
Salem	1,497,061	598,824	61,900	536,924
Coimbatore . .	1,526,191	610,476	223,800	386,676
Trichinopoly . .	1,362,298	544,919	198,700	346,219
Tanjore . . .	1,638,161	655,265	685,600	—30,335

The only objection to the proposal is the cost. If the water is to come at all it must be through a channel which takes off at the dam so as to get it at 700 feet level. That will involve cutting through rock over some distance. We have made what calculation we could with the assistance of professional experts and it appears to us that such a scheme would irrigate about 28,000 acres (mostly in Trichengode taluk and a little in Namakal taluk) and that the expended capital will repay as well in the other three districts if the land tax be levied at about Rs. 28 per acre, which our ryots are certainly willing to do. Already with all disadvantages, taking water from very great depths, the ryots are raising tobacco and similar crops, which with intensive cultivation make the labour worth while. With a canal in their midst it will not only mean one rice crop, but also higher subsoil water-level, throughout the whole taluk, much beyond the reach of the canal water.

Nor would such a canal interfere with what is contemplated for the other districts. Salem can touch only flood water, for it is 700 feet above the bed of the river. The chief purpose of the scheme is to regulate the "living stream" supply for Tanjore, when the rainy season is over. Salem could not touch that level.

2. But the Mettur waters canot help more than one taluk and a quarter of another. There are seven other taluks needing help, Government promised to investigate the Toppiar river. Salem has little faith in that river, for its entire catchment area is in the centre of the district, and Salem knows what the local rainfall conditions are.

The remedy is in wells. Apart from the two coasts, with their deltas, the remedy for the whole of the triangular plateau from the north of the Narbada in the Central Provinces to the north of the Tambraparni in Tinnevelly district, the sole relief is through wells. For this area seldom gets full benefit of either monsoon, and is perpetually in the agony of the uncertainties of rainfall. So the question of wells is of more than local importance.

The Government of Madras sent its Industrial Engineer abroad to make an intensive study of modern boring practice in Great Britain and America. He came back in January 1925 with a fund of valuable information. His report is carefully enshrined in G. O. No. 1391, dated 22nd September, 1925.

The average ryot, not even the extraordinary landlord can possibly afford to undertake the expensive experiment of trying boring. The Paliakottai Pattagar, the premier cattle farmer of this district of Coimbatore, tried it and I believe lost over Rs. 3,000. I would suggest that Government at its own cost make experimental boring in typical areas in the Provinces, selecting the neediest spots first, and ascertain for each area the average cost in maxima and minima. The ryot would then know what it would involve, and he would be in a better position to decide about the matter either as an individual or in co-operation with others.

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QUESTION 14.—IMPLEMENTS.—There are several implements which can be and are used by our own ryots requiring no more than man or cattle power, and are being benefited very considerably thereby.

The problem is to get the ryot into the habit of using them. Two ways will be useful:—

1. Through the Farmer Demonstrators suggested in answer to question 3.

2. Through the new Middle Schools suggested in answer to question 2. What the village boy has actually handled for two or three seasons is what he can be trusted to use. On my own farm, it took years to get the older men to come of their own accord to prefer even the wheel barrow to the ridiculously tiny basket filled by a man and carried by a woman, or the chaff-cutter to the country *koduval* with the consequent wastage of 10 to 15 per cent. of the fodder. But their children who grew up to them, find no difficulty in such preference, and are indeed much more ready to take to newer tools given to them. So also the older men used to complain of the heavy draught of the iron ploughs although the condition of the cattle showed no signs whatever of any strain. Their sons have come to despise the old wooden plough. Presently more and more educated men will be getting interested in agriculture. The Demonstrators should specially visit and help them to introduce new tools.

QUESTION 16.—ANIMAL HUSBANDRY.—(*a*) (*i*) The weekly market (*sandai*) referred to in reply to question 3, is an excellent opportunity for making available the services of a stud bull. As there is a weekly market every day not beyond reach to the ryot accustomed to walk three to seven miles, he will make use of the stud bull regularly. In connection with the larger weekly market I suggested Farmer Demonstrators. On their farms (not all, but in connection with the very best of them) stud bulls may be permanently stocked. By such an arrangement a gradual improvement of the stock may be secured. The ryot does appreciate better service. If breeding is so haphazard, it is entirely because there is no option.

But what is a 'better breed'. On my farm the test is, can it easily draw the iron plough, in fact thrive on it and do heavy work? With this one test in view, just an existing country breed of small stature has been attended to on the selection basis: and we have now cattle which look no different from others in the neighbourhood in build, but which easily do fifty per cent. more work.

(*b*) The ryot has affection amounting to veneration for his cattle. Usually he knows how to care for them under ordinary circumstances. But his ignorance is profound, and his resources are very limited: so limited that sometimes he has to choose actually between food for his children and fodder for his cattle.

In the inland districts, though rainfall is precarious, there are hills with grass on them many months during summer, and the elevation generally seems to be favourable for cattle. Why is not the silo method taught at Coimbatore? There are immense possibilities in it as a relief in the whole of the inland area, wherever any hills are within reach. Silos can be organised on co-operative basis.

In Salem, there is still plenty of grass on the hills in March and April. Much of it is suddenly scorched up, uneaten in April and May. Cattle suffer very severely in May, June, July and August till the *Adi** rains come.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) Depends on the water: canal, well or rain. He has no useful occupation for the off-season.

(*b*) Demonstration, adult education, better rural schools. Let the industries be as a rule related to the staple crops and a really available market; then they are sure to catch on, as the process of education is persisted in.

(*c*) The chief obstacle is in marketing. It is difficult enough for the ryot to learn a new industry. He has neither the knowledge of the world nor

*Tamil month, roughly from the 15th of July to the 15th of August.

the capital or enterprise to organise means for disposing of his products, whether it be eggs, silk, honey or twist. Recently within a couple of miles from my farm a man started the industry of woollen twist-making. He supplied the *charkas* and the wool, and offered to buy all the twist at a certain rate. He started the thing off by employing a man for a month to teach the art. Practically the whole village was spinning within the month. The twist was all taken to a carpet factory, woven into rough *kamblis* and shipped off to America. The villagers knew nothing of what happened to the twist once it left their hands. An absolutely new industry has been established in that village now.

Some one, non-official or official agency, has to go beyond the stage of mere education and put the new industries they wish to introduce on a business basis. The middleman's place must be taken by a co-operative society. A number of co-operative societies, it may be, should as a union do the market. Obviously then the market must be first secured and as it were orders registered ahead before the industry is introduced not as theory but in terms of cash value.

Our own difficulty, in the Y. M. C. A. in regard to poultry is marketing.

(*d*) As the Government of Madras did with aluminium, it would be well-advised in helping to pioneer certain carefully selected industries.

(*h*) Organise and register a village panchayat and give it such responsibility. The sense of self-respect is certainly effective. It must be kept warm and fertile by various processes of education.

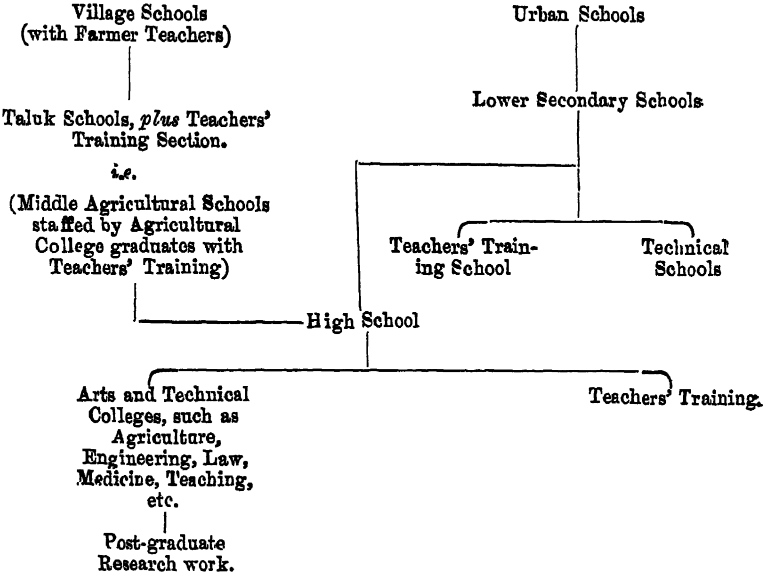
QUESTION 22.—CO-OPERATION.—(*a*) In this Province the problem is not to further extend the movement, but to turn it toward avenues other than credit. There are over one hundred lakhs of rupees of surpluses in the various co-operative credit societies and their financing banks just now. Non-credit work, so called, is still very shy.

(*b*) Societies for cattle insurance and for silos should be added to the list.

(*c*) Yes.

(*d*) Certainly.

QUESTION 23.—GENERAL EDUCATION.—The following chart may illustrate what I attempted to suggest in my answer to question 2.



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(*a*) Deserving boys go from rural middle schools to the high schools and then on to college, including agricultural college.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(*a*) After twelve years of work in the villages it is our conviction which we have laid down for ourselves as a fundamental principle that there is such an indivisible unity in the life of the villager that the only way in which we can possibly help him effectively to help himself is to try to serve him simultaneously on every phase of his life and relationship we can possibly touch: education, health, debt-redemption, arbitration, temperance, agricultural improvements of all sorts, marketing produce, subsidiary industries, etc. The villager is so ignorant and so confiding in those who are persuasive, that he is equally impressionable to good influences which help him and to evil influences which relieve him of all advantages. He is so surrounded by people who because they know just a bit more, are quite capable of exploiting him, that work for him on a large scale and in comprehensive scope should be undertaken immediately. Obviously this is work for the non-official more than for the official. But our experience has shown that official assistance, willing and enthusiastic is always forthcoming to the non-official organiser and social servant. I wish somehow this service could be laid on the conscience of the educated community. At the present moment I am engaged in promoting a movement among the students of Madras city toward vacation service. In this Province many non-officials have thrown themselves into work in the co-operative movement. Similar interest and service for rural reconstruction will not be long in developing.

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Oral Evidence.

11293. *The Chairman:* Mr. Paul, you are the National Secretary for the National Council of the Y. M. C. As. of India, Burma and Ceylon?—Yes.

11294. You have put in an interesting, if I may say so, original note in answer to the Questionnaire issued by this Commission and my colleagues and we are greatly obliged to you for it. Do you wish to make a statement of a general character at this stage or shall we proceed to question and answer?—I should like to make one statement. I had very little time to the preparation of these answers. I should like to have developed my answer to the last question as to the welfare of the rural population and if I am permitted I will forward a memorandum to the Commission at a later date.

11295. There is no reason why you should not let us have that if you can find time to do it?—Yes. There is one word I want to say in connection with that, namely that it is our experience in the Rural Department of the Y. M. C. A. that we get the best results only when we tackle the rural problem as a unit. It is really an indivisible problem. When we have attended to economic relief we have not really benefited the villager, or when we have attended to agriculture with a view to increasing his earning power in any way either by increased production or subsidiary industries we have not really dealt with the problem.

11296. If there is to be an advance it has to be all along the line?—Yes; some kind of agency, preferably non-official, should assist the villager with that object in view.

11297. *Professor Gangulee:* Why do you emphasise that it should be through the medium of a non-official agency?—Well, for obvious reasons I think. First of all the magnitude of the task is so great and secondly I think the non-official agencies are able to get nearer to the villager than the official agencies.

11298. *The Chairman:* The Commission would like to hear from you very shortly what your training and experience in this matter has been?—To begin with I am a farmer myself; I come from a family which has been farming for many generations, I mean the farming caste. I have been a teacher taking to education, I hope with interest, as a vocation. Then since I joined the Young Men's Christian Association in 1912 I have devoted the bulk of my time to the study of rural problems. The first year I spent entirely in going round India which was already familiar to me, with the rural problem in view. Since then I have been Head of the Rural Department of the Y. M. C. A. At one time we had a staff of 42 Secretaries in that department chiefly concerned in helping the formation of co-operative societies for credit and other purposes. After seven years of experience in that line our department went forward to re-organise on slightly different lines; but all through this time from 1913 onwards I have been chiefly responsible for the rural work of the Y. M. C. A. We have worked in three different Provinces, chiefly in the Madras Presidency.

11299. I think we ought to have it on the notes if it is the case, that the Y. M. C. A. knows neither religion, caste, nor sect in this general work that it carries out; is that the position?—Quite so; in our Rural Department we recognise no sectarian or other limitations. To make it perfectly plain, it is not a proselytising body.

11300. The Commission has been interested to read what you say of research. How closely are you in touch with the research carried on in this Presidency?—My statement is only an impression.

11301. So that you would not wish to press home too far the impression that research is not receiving the attention it has deserved?—No, the point is, I was much impressed by what other countries are doing.

11302. On page 219 you say: "With the statutory provision now secured for the registering of village panchayats it should be possible to revive the good features of this system." I should just like to have on the notes what

statute that is?—There is a law in this Presidency for the restriction of panchayats.

11303. Recent legislation?—Yes, recent legislation since the Reforms. I believe there is something like it also in the Punjab and the United Provinces.

11304. You then go on to say: "Education would then go to the village child of both sexes as indeed in the old days in South India." Is it historically true that both sexes enjoyed something like equal educational opportunities in the old days?—Yes. It is so to-day; the village school is mixed; the little lads and lasses go together to school. I have referred to this book which I have sent to your Commission, Dr. Mason Olcott's *Village Schools in India.*

11305. I have read it with your note. But it is your view that, so far as the State can control these matters, an equal chance is given to girls and to boys?—Yes, I should think so as far as rural education goes.

11306. Do you think girls are taking advantage of it?—Yes, up to a point; of course the boys do not take much advantage of it either.

11307. Do you really compare the extent to which girls take advantage with the extent to which boys are taking always of it?—Not nearly so much.

11308. This ancient system of village education held good at a time when the village community was as a rule completely isolated from the outside world, did it not?—Yes, but I do not think that was or need be a necessary condition.

11309. I quite follow that; you say so in your note. I am only trying to test the historical facts. I ask for information; I do not pretend to know; was the education founded upon religious teaching?—No.

11310. Definitely not?—No, except with regard to Mahomedans only.

11311. *Dr. Hyder:* Were not the village *tols,* more or less under the Brahmins?—The *tols* were in Bengal, not in the Dravidian country. In South India I believe that most of the village schools were in the hands of Non-Brahmin village teachers; it was a caste.

11312. Was it secular or religious teaching?—Yes, secular. But everything in India is religious; I mean to say religion entered into it, but it was not dominated by religion in the same sense as the Koran Schools are.

11313. *Chairman:* Can you give us the date when this system flourished?—As I have been saying the system has not yet died out.

11314. I am asking you for an indication of the date when the system flourished?—I should say within about 30 or 40 years.

11315. Have you any facts which you can lay before the Commission as to the result of this system of education at the time it flourished?—In our language, the Tamil language, we have very extensive continuous literature; the authors were mostly products of this, as I may call it, national education. By 'national' I mean widespread rural education. For instance the author of the most widely accepted book on ethics was a weaver all his life.

11316. What I am merely concerned with is not the contributions made to Tamil literature by this or that individual but with the standard of literacy obtained by the system of education at the time when it flourished?—I have no records as to that; as regards Bengal there is a very helpful book written by Mr. Stark.

11317. I suggest to you that a system of this nature never has, in fact, made a substantial contribution to the literacy of the cultivating population. Do you agree?—Is literacy necessary for education?

11318. I am talking about the power to read and write?—Yes.

11319. *Sir Henry Lawrence:* Are your remarks confined to Dravidian villages?—South Indian villages.

11320. But I heard you use the word Dravidian; were you definitely speaking of Dravidian culture?—No, I did not mean to press that point in any way.

11321. You mentioned the word Dravidian, did you not?—Yes, but as covering Tamil, Telugu, Kanarese.

11322. All South India?—Yes.

11323. *The Chairman:* I am trying to get from you whether this system did, at the time it flourished, make a substantial contribution to the percentage of literates amongst the cultivating classes?—I do not imagine it did.

11324. On page 219 you are detailing the objects which you have in view in education: "(1) giving elementary general knowledge in regard to many aspects of life important to the villager, (*ii*) literacy, and (*iii*) a general capacity for receiving and assimilating the further knowledge, theoretical and practical, brought to them by Agricultural Demonstrators and propagandists, by co-operative organisers, by Health Officers, etc.". Would you not put literacy first of those three?—No I would not.

11325. That is deliberate?—Yes.

11326. What do you mean by "many aspects of village life important to the villager"? Do you include the practice of cultivation?—Not only that.

11327. But you do include it?—Yes, I do.

11328. Further would you go in for vocational training before you went in for literacy?—Not vocational training; I am thinking of the primary school right in the village; but there the boys are apprenticed with their parents and get practical agricultural training. I would give them more knowledge, and, what is even more important, the aptitude for getting more knowledge.

11329. How early in life do you suggest that boys should go to these schools?—They would start at about 7 or 8.

11330. And leave?—We should offer a four years' course.

11331. Is it your view that you could teach the children general knowledge in many aspects of life of importance to the villager, in the general practice of husbandry so far as they do not learn it on the farm, and other methods and also make them literate, all in four years?—It might seem unbelievable, but, in the first place, I think it is the opinion of most educationists that a great deal of time is now wasted in the elementary schools; what could be learnt in one year is now spread over two or three years. In the second place if the projected method of education, with regard to which I have suggested a visit to Moga in the Punjab is practised, it would achieve precisely what I am suggesting. I do not know if you want me to explain that; I can do that in two or three minutes.

11332. You know that in Scotland one of our principal exports is the export of educated people. Probably you have observed that?—Yes.

11333. We have found there that literacy cannot be taught in one year, if that is what you want to attempt here. I am very interested in your suggestion on page 219 that the whole basis of education should be changed. You will agree with me that this is a fundamental change that you are suggesting?—Quite; I am not talking theory; I am only stating here certain principles which have been accepted now by the great missionary bodies. In most of the language areas of India the missionary bodies are co-operating to bring about such a change in the rural education which they are offering to the Indian Christian communities in their charge.

11334. You say that until there is a remodelling of the whole of the rural education, and agricultural middle schools arise up and down the whole country at the call of such a remodelled primary education, things are not going to move forward; that is your argument, is it not?—Yes.

11335. The bed-rock of your proposal is that the village community should be self-contained in the matter of the control of education?—Yes.

11336. How do you work that in the constitutional position of the Education Department, following on the Reforms of 1919?—I do not follow the point of the question.

11337. You think that the educational machine of the Provincial Government would not lose control, would not lose prestige, and would not to some extent lose its future, if the whole primary education of the country were handed over to the village community?—No; because the village community would be dependent for its staff of teachers on the Education Department. There is of course secondary and University education which is apart, but so far as rural education is concerned, the main service of the department would be in the training and supply of teachers.

11338. But it is your hope that the pay of the teachers, the capital and current expenditure in your own words, of the whole system would be met by the village community without a subsidy from the Central Government?—Yes, eventually.

11339. You have thought the matter over and it is definitely your view that a change of this nature is entirely consonant with the principles of Representative Government and the constitutional position as it now exists?—Yes.

11340. On page 220 you are talking about a Report of a Commission on Village Education in India of which you have been good enough to give us a copy. You are dealing with vocational middle schools which you say "should be the main source for the supply of teachers." Is that going to be a vernacular system of middle schools?—Yes.

11341. Entirely vernacular?—Yes.

11342. No English as an optional subject?—No; I should not think so.

11343. Of course all boys or girls who pass through the vocational vernacular middle school would not become teachers?—No.

11344. What do you think the ones who did not become teachers would do?—Those who go to the middle schools would be mainly from the 8 million people who are absentee landlords now.

11345. You do not suggest that the son of an ordinary village cultivator should not go to the middle school?—I would not prevent him.

11346. I wonder whether you thought that the absence of English, in its effect upon closing the door to a University education, might limit the usefulness of vocational vernacular middle schools?—My answer to that is that I believe in the vernacular being very much more used in the future in University education. In this Presidency the move is entirely in that direction up to the entrance to the University. The University is already planning to teach through the vernacular.

11347. Let us be quite clear about that. Is it your ambition that a boy should be able to pass through the whole school system and obtain a University Degree without learning English?—Not the whole University system, but to pass on from the middle school class, that is when he is about his fifteenth year, or in his later teens, I should say, between 15 and 19.

11348. He should leave the middle school at about 19?—No, he should leave a little earlier.

11349. Say 16?—Yes.

11350. So that up to 16, he would have no English at all?—No.

11351. Where would you send him after that?—He would go on to the high schools.

11352. You are an expert on education in this country; is it your view that a boy who is not taught English up till his sixteenth year can acquire his English and be equal in the University, to boys who began English when they were fourteen?—It depends upon what the University demands at that time.

11353. I am not sure that you catch my point?—With the University course as it is now it will be very difficult for him.

11354. So that you are concerned with radical reform of the University as well?—Exactly; but I am more concerned about giving education to the 230 million people in India than about the few who go to the University.

11355. Do you agree with me that any attempt to place a barrier of non-English teaching schools between an able boy and his opportunity to go to a University if he so wishes is doomed to failure from the start?—I do not see that.

11356. Do you think you can place a barrier between an able boy and his University carrier by refusing him an English education to him until he is sixteen? Is that a good idea?—Such able boys will be always very few, and remember my concern is for the masses.

11357. I know that, but where in your scheme, are you providing for taking up the able boy? Is he going to the vernacular vocational middle school?—He goes to the vocational middle school. For the able boy I am providing, as you will see, scholarships to push him on to the University.

11358. I am still on the point of when he will begin his English?—When he leaves the middle school.

11359. After he is 16?—Yes.

11360. But you do also agree that delaying the beginning of his education in English till that time means you will have to make important alterations in the University course?—Yes.

11361. I have read all that I can find to read about the Moga School; and I am deeply interested in it; it has to some extent reproduced itself in the North of India, has it not?—It is in the North of India.

11362. But I ask you whether it has to some extent reproduced itself, I want to know whether several schools on the Moga principle have been started?—Yes; Moga itself is a training school for teachers. Training schools for teachers are being started in Southern India and elsewhere, but Moga enables us to get teachers to start a different type of village school, and in that sense it is propagating its idea.

11363. It is teaching teachers to teach by the means which those teachers are going to use when they come to teach the ordinary schools?—Yes.

11364. Do you think it has had an important and beneficial influence upon the teaching in those schools where Moga students have gone to teach?—Yes, exactly; in so far as it makes education practical and rapid.

11365. What I am concerned to find out from you is this, whether you are quite satisfied that the Moga principle is capable of transplantation to these latitudes?—Yes.

11366. You are satisfied that it would be a success in, for instance, the Madras Presidency?—Take for instance the first year in Moga; in the whole of the first year the boys just build a village home; the whole of the ten months all that they do is to construct a small hut in the class room; but in the course of that one year they have not only read through three readers but have also got a great deal of arithmetic and mensuration and considerable practical knowledge as to the necessity of doors and windows and they have used their hands all the time. That is the project of the whole of the first year. In the second year is the project of the farm; in the third year the project of the village; in the fourth year the project of the post office. So that in these four years they get to know all that a villager need know for himself and in regard to his relations with the wide world. He becomes literate and learns a great many things.

11367. According to the paper which was provided for us by the Educational Commissioner with the Government of India that particular system works extremely well, but I will repeat my question. Are you satisfied that that principle would be as successful in this Presidency as it has been in the Punjab?—Yes.

11368. Of course the population of the Punjab is different from the population in Madras?—Yes.

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11369. All I want from you is an assurance that in your considered opinion you take the view that the scheme would work as well in Madras as it has worked in the Punjab?—If I may speak frankly I think it will work better.

11370. I see you contemplate the teacher in your village school being one of the local farmers?—Yes.

11371. You would take him away for a course of training?—Yes, he would have gone through the middle school.

11372. In opening your system you would not wait until the middle school boy was available; you would choose the local man and train him?—Yes.

11373. On page 221, you very wisely say that in the end education must depend on the demand. I want to ask you whether, in your experience, there is any demand at all for education in the villages?—There is a very big demand now.

11374. A very active demand?—Yes, it is active, but it is indefinite.

11375. It is a latent demand, which requires to be stimulated by the provision of the right type of education?—Yes.

11376. In your view, it is most important that the goods offered, if I may use a commercial simile, should suit the market, otherwise you will have disappointment?—Yes.

11377. Is the demand which you describe as indefinite in any way vocal?—It is seen in action. If I may give a particular example, quite recently one of my own tenants who knows very little, started a school in his own village, because he could not help doing so.

11378. Are you in favour of the provision, according to which local areas may, through their elected representatives, decide to adopt compulsory education?—Yes.

11379. On page 222, you are talking about agricultural demonstration and propaganda; I assume that under the heading "Educational opportunity of the *sandai*", you include demonstration propaganda?—Yes.

11380. You mean the opportunities for propaganda?—Yes.

11381. Apparently, all the village makes an effort to go to the market, to see their friends, to buy a few necessities and, I suppose, to sell as well?—Yes.

11382. Are you enthusiastic about the co-operative movement in this country?—I am very enthusiastic about it.

11383. Do you want to see selling societies?—Yes.

11384. Do you think that members of selling societies ought to go to the *sandai* and there market some of their produce, or do you think they ought to market it through their co-operative societies?—While I am in favour of selling societies, it is an extraordinarily difficult thing. I would favour selling societies more in urban areas than in rural areas.

11385. I do not know whether it is so in this country but, in my own, one of the real obstacles to the progress of co-operative selling concerns is the fact that whatever the farmer is pleased to do, his wife insists upon going to the market?—The problem of the villager is not so much to sell as to wait; the problem is whether he can wait and sell; it is there that a co-operative selling organisation could help him to wait.

I am quite certain that with your knowledge you are not going to say that a co-operative selling organisation goes off to market, *en masse*, because it does not, does it?

11386. On page 223, you say: "Pamphlets are of no use, because of illiteracy". I want your best attention to this point, because the evidence before the Commission is not at all clear one way or the other. Some people agree with you; other witnesses have said that sooner or later, if the literature is of the right kind, interest is excited, and the few who can read convey the information to those who cannot?—Yes.

11387. You do not agree with that?—I do agree with that; but I have put it more strongly than I ought to have.

11388. You do agree with that?—Yes; pamphlets are of some use.

11389. On page 223, you are talking about the advisability of taking the general direction and administration of agriculture out of the normal constitutional channel in which it now runs and of handing it over to something in the nature of an Agricultural General Staff. Is not that broadly the effect of your recommendations?—Excepting this, that I would make it a federal General Staff in constitution rather than a centralised General Staff appointed from the top. There are two principles there; we want the interested co-operation of the Provinces based upon public opinion in the Provinces; it would be fatal to prevent that. We also want, at the same time, to save agriculture, which is the essential industry of this country, from the fluctuations that may happen owing to the changes in the weather of politics. We could best combine it, I think, by constituting a General Staff on a federal basis, each Province having a vital part in it.

11390. So that, whatever the merits or demerits of any particular suggestion, you are definitely in favour of some centralised body, which could attend to agriculture throughout British India. Is that your idea?—That is my idea.

11391. On what do you found yourself in that view?—I fear that already, after the Reforms, there has been too strong a temptation to neglect certain things which do not, so to say, pay in the matter of votes.

11392. You are referring to the local electorate?—Yes, and it would be highly prejudicial to the interests of the country as a whole, if agriculture should at all be subject to such risks.

11393. Of course, when you quote the instance of Germany and the creation in that country of an Economic General Staff after the War, I am sure you had in mind the fact that what is possible in this world in moments of crisis is not necessarily feasible in normal times?—No, but the Economic General Staff has continued; I have been in Berlin this year.

11394. On page 224 of your note you are talking about agricultural indebtedness. Have you had experience of the operation of such statutes, whether All-India statutes or provincial statutes, as have been designed to deal with this matter of debt, and with their working in this Presidency?—Just a little here; there is the Punjab Land Act.

But not in Madras?

11395. *Mr. Calvert:* The Alienation of Land Act?—Yes.

11396. *The Chairman:* What special statutes are you thinking of in Madras?—I am thinking of the Usurious Loans Act.

11397. The All-India Act?—Yes.

11398. Not anything else?—No.

11399. Do you see a danger in the rapid spread of the co-operative movement, if the effect of that progress is merely to place facile credit at the disposal of co-operators, without education and better appreciation of the economic position, which is the natural corrective to a too ready acceptance of such facilities?—I am very much inclined to say that we have come to that stage in the Madras Presidency, except that I do not want to put any damper on the good co-operative work which is being done; but I think it is high time, in this Presidency at all events, for people to attend to the non-credit work.

I do not think that people who have the interests of co-operation at heart are averse to a considered policy of pruning where the green wood has grown too fast.

11400. In the note you suggest that, amongst other activities which the college and the dairy farm at Coimbatore might render, would be the teaching of the use and demonstration of the practice of making silage?—Yes.

11401. Is it within your knowledge that that practice is not, at the present moment, being carried out in Coimbatore?—That is what I heard quite recently.

11402. Would you like to give us the source of your information?—The Agricultural Demonstrator told me.

11403. Then apparently, the Agricultural Demonstrator and the Director of Agriculture are at a difference of opinion on that particular point. I should like to be quite clear about it. Were you told that the silo pit was not in use or were you told that special lessons were not being given?—He did not know anything about silos.

11404. The Agricultural Demonstrator?—Yes; he knew nothing about it.

11405. You were surprised?—I was very much surprised.

11406. Have you any experience of the silo?—Yes.

11407. Do you regard it as a useful contribution to agricultural practices in India?—Yes, exceedingly useful and practicable.

11408. Have you practised it on your own holding?—No, I could not do it up till now; I wanted the Demonstrator's help to start a silo pit on my own farm.

11409. The silo in India appears to be like heaven; everybody wants to go there, but nobody seems in a hurry to get there?—Quite.

11410. How do you account for that cautiousness in the case of the silo?—I cannot.

11411. *Dr. Hyder:* Very little is known about it, I suppose?—Yes.

11412. *Sir Henry Lawrence:* Is this Demonstrator an officer of the Agricultural Department?—Yes.

11413. *Professor Gangulee:* Did he tell you that some experiments were going on here?—I did not ask him; I asked him "Do you not know all about it?", and he said, 'No.' I should be very sorry if I have inadvertently said anything which does not square with the facts, but I feel that silos are a great blessing and ought to be demonstrated up and down the country.

The Raja of Parlakimedi: I think Mr. Littlewood, the Livestock Expert, has written a pamphlet on the subject of silage.

11414. *The Chairman:* You have placed a very clear statement before the Commission in the matter of your views on Irrigation. You will admit that those views are only to be tested by technical criteria, and that probably it would not be helpful if we went into the details to-day. I do not know whether you can tell the Commission whether you have placed these proposals and views before the proper authorities?—I have already done so.

11415. How long ago?—Within the last three or four weeks.

11416. The rest of your note appears to be very clear; but I should like to know two points about your paragraph on General Welfare. Does the organisation for which you work attempt to cover the whole Presidency, or have you any definite area with a definite number of villages?—The Y. M. C. A. have four centres in South India, and our idea is to make them demonstration centres; we cannot possibly cover the whole country; it is our earnest hope that others will follow our example and we are prepared to give any assistance that we can.

11417. You say that after twelve years of work in the villages, you think you have laid down for yourselves the fundamental principles, which you describe. How far, in your view, have you been able to effect that fundamental principle in any village or group of villages?—Right in Coimbatore we are trying to do that.

11418. What stage have you reached?—We have been putting this particular method into practice now for four years there.

11419. Are there any indications?—I should say generally speaking, that they are very successful; I have the latest report, and can give each member a copy. May I send them to the Secretary?

11420. Thank you very much. One word about adult education, I rather gather from your note that there again you are not so much concerned with literacy as with the quickening of the mind for matters relating to the particular line?—Yes.

11421. Have you placed great faith in Dr. Mason Olcott's experience? —Yes.

11422. You have his book before you; would you turn to page 190? He says, " Inasmuch as millions of the voters in India are illiterate villagers, a thorough and persistent campaign for adult literacy," not adult education but adult literacy, "is absolutely vital to the political salvation of the country ." Now, whom do you favour as an expert on this particular point, the writer Dr. Mason Olcott or yourself?—That is rather a delicate question to answer.

11423. I am sure it is, but I cannot help it?—In regard to what Dr. Mason Olcott says, it is the ideal but with the increase of population at the fearful rate that India is having, is it possible to expect adult literacy within a measurable time? If I may point out Dr. Mason Olcott himself says that at the present rate of increase of elementary schools that is, to provide for 12 per cent. of the population, it will take 100 years to cover the country, not reckoning on any increase in the population.

11424. This is a counsel of perfection, but you would not be afraid to take a road the end of which is 100 years hence when you are dealing with an Empire like India?—I would, but when I advocate adult education I am not putting adult literacy out of it. But in the meantime the villager wants information and training in regard to certain things for which literacy is not essential and which he could have without literacy.

11425. Would you agree with me, that in this country the absence of literacy amongst parents is the most potent cause of the relapse into illiteracy among boys who have at one time been literate?—Possibly that is one of the causes. There are other causes.

11426. I say one of the most powerful. Perhaps I said 'the most powerful'. But you agree that it is an important cause, the fact that the boy having become literate at school, returns to a home in which no one can read, no one can write and in which there is no literacy. You agree with that?—Yes, that is perfectly obvious.

11427. If you agree then do you think it is worth while to spend important sums and precious effort on teaching literacy to children unless at the same time you apply all the reserve forces at your disposal to attain literacy amongst the adults?—There again I would welcome such a thing, but I do not think the present generation ought to wait. There is only a certain amount that India can spare. I believe all of it ought not to be spent in conferring a literacy which is of a very doubtful permanency; but I think a great deal of it ought to be spent in giving education.

11428. But I am not sure I accept the suggestion that my proposal involves waiting. It seems to me that your proposal involves waiting. You are gong to educate the boys and let them lose that education in illiterate homes. It was only a suggestion in the converse principle. Surely it is a question of applying all the resources available on attempting to establish literacy amongst the children and at the same time a certain degree of literacy amongst the adults so that you bring out a community in the village of which, let us say, 50 per cent. is literate. You would never have to face the same degree of illiteracy amongst the adults once you set the ball rolling; that at any rate is the theory?—Perhaps I am too much obsessed with the fact that according to the traditional methods in India a great deal of knowledge and aptitude is, as a matter of fact, acquired by our people without books, without knowing how to read and write A great deal of literature itself is absorbed in their minds without their being able to read or write. Perhaps in that particular point India is slghtly different from Western countries.

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11429. Do you not attach great importance to a cultivator being able to keep his own accounts?—Quite so. But he does a great deal of accounts without knowing how to put the figures on paper. The milk seller who comes round to our houses, the *dhoby* or the washerman know all the accounts of a whole lot of houses without knowing how to put down anything on paper.

11430. I am sure that education destroys the memory—after all the most reasonable execuse that most of us have—but at the same time when a thoroughly literate middleman is dealing with a cultivator who can neither read nor write, who is quite unable to record the prices which he is offered or to read the market prices which other people give him, I very much doubt whether a bargain struck on those lines is a fair bargain as between the middleman and the cultivator?—There I agree with you.

11431. Do you not agree with me also that no greater service could be rendered to the cultivator than to ensure for the cultivator a fair share of the value of the produce which he grows?—I agree.

11432. Are you not coming towards literacy as a primary objective of education in India?—Literacy is a part of the education, I should say.

11433. As an essential part?—A very important part; I am willing to go so far.

11434. *The Raja of Parlakimedi:* For vernacular education among rural areas, would you advocate books to be written with the least Sanskrit influence or the most Sanskrit influence?—It all depends upon the locality selected. After all some Sanskrit words are as familiar to our people as the vernacular words, if you put it like that. But certainly it ought not to be pedantic; it ought not to be in any way high-flown, but as simple and unequivocal as possible.

11435. Yes, it should not be high-flown at all; but books should be in the same style as that in which the village children are accustomed to talk, and express their ideas?—Quite so.

11436. With regard to village sanitation and education as an All-India affair, would you suggest that those subjects should be handled by non-official bodies in preference to Local Boards which are going to function as non-official bodies as quickly as possible. Otherwise the country will be in a hopeless condition. I trust that the Local Boards, the Taluk and the District Boards will quickly get out of the official attitude and function as non-official bodies?—When I speak of non-official bodies I include the Local Boards.

11437. For instance suppose a Taluk Development body is existed in a particular area, would you prefer that sanitation and education should be handed over to that body in preference to Local Boards?—That depends, I should say, upon the particular area.

11438. Do you not think that the people who constitute the Taluk Board are the people who constitute the Taluk Development Board?—I do not see if there be such a cleavage.

11439., *Sir James MacKenna:* In answer to the Chairman you threw out the suggestion, I think, that it would be preferable if English were not introduced into the curriculum at an early stage?—Yes.

11440. You would say that the result of the present system of education is that a boy is taught in a foreign language?—Yes.

11441. And you conside that as a serious educational loss to the country?—Yes.

11442. That is to say, th boy is not trained in the literature of his own country?—No.

11443. Is it a loss to the country that boys should know English better than their own language?—Yes, because it creates an impassable gulf between the parents and the children. That is very general in India.

11444. You also made a remark in reply to the Chairman that the demand for education was strong. You have considerable experience of the whole of India?—Some.

11445. Would you apply that remark to the Presidency which you know best?—I think it is general.

11446. That is the impression you gather?—Yes.

11447. There is another point about Agricultural Colleges. Wherever we have been one of the arguments put forward was that they were in the first place training staff for the departments and in the second place training young men who wanted to go back to their own land. I think you probably know, to put it in a general way, that this second object has not been met to the extent hoped. Do you think that there is really a demand for this sort of education by well-to-do boys who are going back to their own estates?—I should not think so. I do not think a man who wants to cultivate his own land, either by his own efforts or through tenants, is really thinking of the Agricultural College at the present time. That is my impression.

11448. That of course is more or less the experience of all countries, is it not?—Yes.

11449. One final question with reference to the Association of which you are the National Secretary. I take it that probably the Young Men's Christian Association is the best organised body on social service and public work of that kind in India. What agency do you use to influence the general mass of the educated young men of the country so as to instil or introduce the idea of social service?—We work in all the different centres and among the University students. I am just now engaged in organising something in the Madras City on these lines. During the next week I am booked to speak in all the colleges in Madras on this particular subject of rural welfare.

11450. That obviously is the best way to disseminate the principles which you so clearly lay down in your memorandum?—Yes.

11451. *Professor Gangulee:* Can you give the Commission some information with regard to the scope of the Village Panchayat Act?—I am very sorry I cannot give the details just now.

11452. Are you of opinion that the Village Panchayat Act of 1920 was supplying a first step towards rural reconstruction?—Yes, I think so.

11453. That is your considered opinion? Now, can a village panchayat undertake any work without the sanction of the Taluk Board?—There again, the Village Panchayat Act gives perfect freedom to the Taluk Board to devolve responsibility on the village panchayat if it chooses to do so. I have here a very interesting document issued by the President of a Taluk Board in the North Arcot district from which I gather—I have not visited the Cheyyar Taluk Board—that the Taluk Board there has organised about 150 panchayats and it has decided to devolve considerable responsibility on the panchayats.

11454. Supposing the Taluka Board did not, is there any means by which the Taluk Board can be made to work?—I am sorry I do not know the legal question; it is a technical one.

Dewan Bahadur Raghavayya: They can.

11455. *Professor Ganguli:* Do you think the Panchayat Act has given a statutory sanction?—Yes.

11456. It may be considered to be the first step towards rural reconstruction?—Yes.

11457. What other local bodies encourage these panchayats?—As a matter of fact I am afraid there is not such activity on those lines. If I welcome the Village Panchayat Act it is as a very necessary assistance, a very necessary foundation for further activities on the part of the Local Boards and non-official agencies to reconstruct village life.

11458. You think this is a foundation on which rural reconstruction can be built in spite of forces working in other directions, I mean administrative affairs and economic affairs?—I would take up this attitude. In our own organisation we started reconstruction work before the Village Panchayat Act was passed. But we try now, it is our aim now, to fit our organisation in with the Village Panchayat Act.

11459. My difficulty is this. There was a time when the centre of gravity, political and administrative, lay in the village. Now with the development of centralised forms of Government, with the expansion of commercial and economic activities, is it possible to have that sort of orientation which you desire in these village panchayats?—Half the trouble lies in the centralised judicial system. With the village panchayats already in existence and with the administration of justice on the spot I think we would have gone half way towards securing village reconstruction. It could not be done by an Act but by co-operative societies and education.

11460. Let me make my point quite clear. In terms of scientific language two forces are working, one centrifugally and the other centripetally. Now the centrifugal force operating in rural life has to be overcome by another force?—Yes.

11461. Do you think it possible under the present conditions, the twentieth century conditions?—The question is, is it possible or is it desirable?

11462. Many things may be desirable, even to go back to Arcadian India, but whether it is possible is the question I have in my mind?—I do not think it is entirely possible, but a great deal ought to be set right and it can be.

11463. Are you in touch with the co-operative movement?—Yes.

11464. You had occasion to observe the actual working. You are in touch with the village organisations. Has this co-operative movement actually reached the peasant?—Yes, I should say so.

11465. It is clear?—In a measure, not as far as you like but the real dynamic constructive force it has got.

11466. The dynamic character you refer to, is it already there?—Yes.

11467. When you start credit societies do they start better farming societies or primary education of their own accord without any initiative from outside? Do you discover such tendencies in the co-operative movement in the Presidency?—It entirely depends upon leadership in addition to official supervision.

11468. Have you organised societies?—Yes. We are responsible in this Presidency for 700 societies.

11469. Through your own efforts?—Yes.

11470. Where do you train workers?—We send them to the Co-operative Department.

11471. So you have that link with the officials?—Yes.

11472. Have you developed non-credit aspects of the co-operative movement?—To some extent.

11473. With regard to the question of literacy and illiteracy, do you not think illiteracy is a serious trouble in the development of the dynamic character?—Would you believe that our most successful Secretary in the Cuddappah district is a woman, totally illiterate? She went round with her rice pounder and collected the dues without any difficulty. The man who kept the accounts is a village teacher. The members are mainly Christian untouchables. The real *de facto* Secretary was the wife. It is the collection and not the keeping up of accounts that was dynamic; that is my point.

11474. You had no difficultly in getting the village panchayat in your rural work?—I should not say that we had no difficulties. We succeeded in some things but not without difficulty.

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11475. Now with reference to leadership, how do you explain the fact that although the majority of students in our Universities come from rural areas there is no indication of our young men undertaking the task of rural reconstruction?—It is due to the extraordinary ignorance on their part.

11476. They do come from the rural areas and it is extraordinary that they do not understand the problem. Is that due to the bad system of education or the social system, or what?—They come from the rural areas, but they come mainly from the middle classes. Taking the average college into consideration I should say that 90 per cent. come from the villages rather than from the towns. At the same time, of those 90 per cent. 88 come from the middle classes and do not realise the situation as it is in the villages. I have had opportunities of talking about conditions to students; they do not know what interest is being paid on loans; how the farmer is being exploited; all those questions of middlemen and other interested people carrying away the share of the producer and such things. These problems are totally unknown to the students. But they respond once their interest is awakened and I am sure that, with a systematic education on these lines, they will become interested in the work.

11477. Would any improvement in the system of education by the introduction of rural economics and rural sociology in the University curriculum make any difference?—It is not merely an addition to the University curriculum; I favour adult education. We should have extension courses attached to colleges just as we have in England. Groups of professsors and tutors ought to be willing to go out to investigate with groups of students.

11478. Is not economic pressure a factor?—Yes, it is.

11479. You make a reference here to the work done by the Taluk Board of Cheyyar. Is that a solitary instance of success?—I should not say so. I have had instances of similar work before the passing of the Panchayat Act. I am not so familiar with other Provinces. In this Presidency a considerable amount of non-official work has been put into the co-operative movement.

11480. Non-official individuals?—Yes, non-officials, quite a number of non-officials.

11481. Are these individuals in touch with the agricultural farms?—Yes.

11482. You know that?—Yes.

11483. So that you have favourable conditions in this Presidency. Do you distribute seeds through your centres?—Yes.

11484. From where do you get your seeds?—From Government.

11485. Now one very big suggestion you have made on page 221 is to decrease State aid to the University and secondary education, and to increase the aid to primary education. Will that be acceptable to the public?—The public would be opposed to it at present.

11486. Do you think the time has come to take such a drastic step?—I fully believe so.

11487. One word about adult education? You say you have been very successful in adult education in your village work?—Yes.

11488. I went through the articles you sent me sometime back about your experience. I have got those papers here. You state: "We simply have got to educate the adult to enable him to read ordinary matter in his vernacular." Your idea of adult education is not then merely what you are trying to tell us but it is literacy?—Quite. As I have been trying to explain I am not opposed to literacy at all; I am looking at the question from the practical point of view.

11489. How do you adapt your method of adult education in your rural areas? How do you proceed?—When we take a rural reconstruction centre, the idea is that we should work from a centre for all the villages within a radius of five miles. One of the first things we do is to construct an open air theatre, because the drama is a good method of education; the cast for each

play is drawn from the villagers themselves; in that way education is imparted not only to the boys who are trained but also to the whole countryside. These things are staged four or five times in the year. We take care to see that a day school is organised in each of our villages, not by ourselves but either by the local body or by a mission; our business is to get hold of the day school staff for the purpose of establishing a night school.

11490. Are you satisfied with the attendance you get?—We are satisfied. We use also magic lanterns slides for conferring literacy on the whole village side; then again we believe in making people read much earlier than write; these are little practical details; we insist on carrying on night schools in every one of those places, and in those night schools we have pupils ranging from 14 to 40 years of age. In a year three readers are finished, the infant reader, the first reader and the second reader.

11491. Do adult girls also attend those schools?—No.

11492. Only adult males?—Yes.

11493. What subsidiary industries have you been able to introduce in the villages?—It depends upon the particular centres; it depends upon the materials available.

11494. You use the raw materials available in the area?—Yes; some new things we have experimented on are the making of fast dyes using the country materials (what can be bought in the bazar for 4 or 5 annas per *viss*): we have been experimenting on different shades and tints making them fast. Another thing is bee-keeping.

11495. All these industries which you are referring to are run on economic lines?—Yes; we are pioneering as you know. What we do in regard to subsidiary industries is to take in apprentices and to demonstrate in the weekly markets; then again we have six or eight weeks' training schools, summer schools, where elementary school teachers are taught.

11496. I am trying to find out whether these industries are run on economic lines?—That is what we are trying to do; I do not know whether we have succeeded.

11497. Can you say to what extent these dye industry, poultry-farming, etc., are paying or not in these villages? Have you no figures?—No, not yet.

11498. *Mr. Calvert:* I should like to ask you a few questions about the Moga Colony school. Are not the qualifications of the teachers at Moga rather higher than the ordinary standard?—No; Moga is of course in the Punjab; the qualifications are usually up to what we, in this Presidency, call the Lower Secondary.

11499. I am talking of Moga boys?—By Moga boys, do you mean those who are taught, or those who teach?

11500. Those who teach at Moga?—Yes, they are of a higher type.

11501. Is not the Moga school under the control of an American gentleman?—Yes.

11502. On page 220 you refer to Agricultural middle schools which you say, should be staffed by graduates of the Provincial Agricultural College. Do you think it is a practical proposition for a poor country to have graduates for staffing middle schools?—The graduate of the Agricultural college does not have very high qualifications.

11503. To turn out a graduate of an agricultural college costs about Rs. 1,000 a year; to turn out a graduate of an Arts college about Rs. 200 a year. Do you have graduates as Headmasters of middle schools in this Presidency?—That is the requirement. We have no middle schools; we have what are called higher elementary schools or lower secondary schools. The Government requires that the Headmaster should be a graduate.

11504. The graduate in a technical line is more expensive to turn out than the ordinary arts graduate?—Yes, but the whole staff need not be graduates of the Agricultural college, though I believe it would be much preferable.

The suggestion I have made is that the staff should perform the dual function of training of teachers as well as of demonstrating over the countryside.

11505. But do you think it is a practicable proposition in a poor country to have as your staff in middle schools graduates of a very expensive training as your agricultural graduates are?—I have not worked out the figures, but my system would call for such a thing.

11506. Can you give us an idea of the expenditure per pupil at Moga?—It is worked out in the report; I am sorry I do not carry the figures in my head.

11507. Is it higher than the cost at ordinary schools?—You mean ordinary training schools?

11508. Yes?—No; I should not think so, that is my impression.

11509. Do you agree or disagree with the dictum that in education the teacher is the chief element?—I do agree with that.

11510. If you can get highly efficient teachers you can have quick results?—Yes.

11511. But in a poor country you have to take what you can pay for?—I am trying to improve the condition of things.

11512. Still the budget would restrict the choice of teachers?—If it is general education, I would reduce the number of schools.

11513. You would have fewer schools with more highly trained teachers?—Yes.

11514. There are distinct limits to teaching even at Moga; if you ask a question outside the curriculum, they cannot answer it?—May be not.

11515. This project method is good within certain limits. If you go a step forward from the project method, the boys cannot answer the question?—The project method tries to cover the whole of rural life.

11516. You think it would be a good thing if you could afford to reproduce that system?—Yes.

11517. Have you seen the new rural economy classes in the Punjab intended to imitate the Moga system?—No; I have not seen.

11518. When you are discussing education without literacy, are you thinking of the type of education given to members of co-operative societies?—Also that.

11519. You find you can instil economic ideas into the cultivators without their being literate?—Yes.

11520. Is not lack of literacy an obstacle to co-operation?—I should say illiteracy is a very heavy handicap.

11521. Dealing with agricultural indebtedness you make a remark which is not clear; you say "In the bad years borrowing is a sheer necessity." I think you mean in the absence of organised thrift?—Yes, in the absence of organised thrift.

11522. Where you have organised thrift then borrowing is no longer a necessity?—In the absence of sufficient food?

11523. You say the ryot seldom if ever has a margin above bare necessaries. Is it your experience in your own co-operative societies that they cannot afford to pay their small share capital?—Yes; in unlimited liability societies we do not insist upon the share capital being paid up; it is only a liability share rather than a paid up share; we gradually help them to pay up their shares.

11524. From their own savings?—Yes.

11525. That is to say thrift is possible?—Yes.

11526. Have you actually had any experience of the Usurious Loans Act being used with intelligence?—No. Of course the administration of the Act varies considerably, but I am afraid my general impression is that the Act is

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not being administered as much to the benefit of the borrower as it might be. That is why I am suggesting the panchayat system.

11527. You think the original intention of the Act is not being carried out?—Yes; after all it is discretionary power that is given.

11528. Do you think that that Act has restricted the credit of the cultivator class?—No; I do not think so.

11529. On the question of the subsidiary industries, you lay stress on the need for marketing. Is it not the case that the cultivator largely grows crops for home consumption? If he makes ropes he makes them for his own use; if he keeps cows he keeps them to provide him with milk. Now, why should not the cultivator be taught to use his labour to raise his own standard of living? If you get the cultivators of a village to combine to repair their village roads, would not that be raising their standard of living?—It would be.

11530. Would it be a subsidiary industry in the sense of increasing their earning power immediately?—I do not understand the question.

11531. I am not talking in terms of money. If a man drains his village does he not raise his standard of living? If he improves the village water-supply does he not improve his standard of living? I think you can have subsidiary occupations for the village people without their products having to go to the market?—Yes.

11532. Then, from your extensive and intensive experience of village life, do you think you can organise the villagers for the common welfare?—Yes.

11533. Something on the lines of the Japanese system?—Yes.

11534. Do you find in your rural work that the village people are amenable to new ideas such as thrift?—Yes; it depends upon what the new idea is.

11535. That is to say, saving small sums of money?—In my own farm I have used the sentiment as regards property as an inducement to thrift. I induce the tenant to buy an animal for himself, a sheep, or a goat, or a bull, or a buffalo, whatever it may be; after a time I induce him to buy a small plot of land for himself, and to build a house for himself. That has the double effect of acting upon his self-respect and also the feeling of property comes into his mind; he requires guidance in regard to every such new idea.

11536. Do you not think that it is a practical proposition to encourage in these people the idea of better living through their own exertion?—Yes.

11537. It can be done?—Yes.

11538. Do you think it would go so far as to instil ideas, say of better maternity treatment?—That is more difficult. It will be more difficult to get them to realise the need of it.

11539. Would it be more difficult than ecconomic improvement?—Yes.

11540. I think, in answer to the Chairman, you said there was a marked demand for education?—Yes.

11541. How would you reconcile that with the leakage between the first and the fourth class?—Partly economic necessity: in fact, the biggest leakage is after the first class; the greatest number of all the pupils in all the schools is in the first class; I think it is also partly due to the teacher; with a better teacher, things would improve. At present the teacher is absolutely haphazard in his methods; that is my observation; he does not know how to go about the thing at all.

11542. Do you think that better teachers can be obtained on the same rates of pay?—I have suggested part-time workers. In some Provinces, I believe in Bengal, school holidays coincide with the busy agricultural seasons. I should encourage the adoption of that kind of thing everywhere. The class hours also should be at different hours from the busy time; for instance, they could work three hours in the middle of the day; that would meet the need of parents to get some labour out of their younger children. I do not think the Education Department would interfere with a teacher if he did such a thing now, but there is no initiative in the teacher; he ought to make adjustments like that to suit his own conditions.

11543. On the question of assisting the parent, do you think that compulsory primary education in rural areas would be a source of economic loss to parents?—When the Chairman asked me a question about compulsory education, I wanted to say that I should use compulsion also in an elastic way. I should make it compulsory for a parent to see that his child does get at any rate a certain amount of education, or does conform to the educational requirements within such maximum and minimum limits as may be laid down, without seeing that he actually attends a certain number of days in a certain school. In applying the Act, I should see to the results. For instance, a parent should have the option of sending his son only to a night school, or to a seasonal school for 3 or 4 months, so long as he is honest about giving his child education. So that I should apply the Compulsory Primary Education Act also to suit the parents; that is very necessary in this country.

11544. The compulsion should be not to send the boy to school, but to make him literate?—Yes.

11545. You have had considerable opportunity for comparing co-operation in various Provinces. In Madras are the rural credit societies mostly self-managing?—I think they will have to go some way further before I can say they are self-managing, they are very much dependent on the Co-operative Department.

11546. Do you think they are making progress along the road to self-management?—Yes.

11547. They are still in need of a little control from Government?—Yes. For instance, the organisation of Supervising Unions has been a disappointment in some parts of the Presidency; in some parts they work well; the reason for failure, I am afraid, is because of the lack of personality.

11548. In Madras, do all castes take part in the management of the society?—Mostly they do.

11549. When you have mixed castes, do the lower castes have any complaint to make about being looked down upon?—No; but the untouchable castes have to be attended to separately.

11550. They have to have a separate society?—Yes; or, if they are in the same society, which is not often the case, they have to have special attention paid to them. Perhaps, you know that we organised, in connection with the Young Men's Christian Association, a special Central Bank for financing all depressed class societies in Madras; it had a turnover of Rs. 65 lakhs last year.

11551. Do you find that the members are taught the economic advantages of co-operation?—Yes.

11552. Do they understand the meaning of all the rules?—I think they are getting to understand them very much more now.

11553. Have you any opinion to offer on the main causes of the failure or success of these societies?—No, I have no general remarks to offer.

11554. In the Punjab, among your own societies of Indian Christians, some were very good indeed, but some others were very bad indeed?—Yes. In the Punjab my general feeling was that they suffered because they did not have a financial basis as in Madras. If we could have a credit society, and then on the top of the credit society, so to say, we had production or distribution societies, that would have fared better; but when a production society is dependent upon its own financial resources, it has a double load to carry.

11555. You have told us a lot about panchayats. What exactly is the difference in sphere between a panchayat and a co-operative society?—That is one of the problems that we will have to handle, I think. After all, there is only a certain number of leading men in a village; they are called upon for every kind of activity. As a matter of fact, the panchayat has nothing to do with the co-operative societies organically, legally.

11556. What kind of functions does the panchayat perform which the co-operative society cannot perform?—The co-operative society can perform almost all the functions, I think I am right in saying, that the panchayat is

expected to do. But I would prefer that the co-operative society be issued from the panchayat, rather than that the panchayat be abolished in favour of the co-operative society. I would like the whole of the village to be organised on a panchayat basis, and the co-operative organisation or organisations there to branch off from the panchayat as a basis.

11557. Is not your panchayat a democratic organisation?—It is.

11558. What is the difference of organisation between a panchayat and a co-operative society?—None, excepting that the one is registered under one Act and the other under another Act.

11559. Is there any difference?—In the co-operative society they elect their own office bearers.

11560. Does not the panchayat elect its own *panch*?—Sometimes, I think Government appoint them.

11561. Do these Madras panchayats exercise any judicial powers?—If it is conferred on them. I am sorry I am not quite familiar with the working of the panchayat system; I believe they have judicial powers vested in them.

11562. By organising co-operative arbitration societies, could they not exercise far more plenary powers than are possible to a panchayat?—I should be sorry if the panchayats were to cease; the panchayat came later, when we started work; but under the co-operative movement we find that we can do everything that we want.

11563. That is my experience. I have not quite understood why you are laying stress on the panchayat?—I welcome panchayats in this Presidency, because the co-operative movement in this Presidency, unfortunately, is so overwhelmingly a banking movement. I think we will get a better orientation with panchayats, with possibilities of comprehensive service as a policy.

11564. Is it your experience that the credit society is the best foundation for all other kinds of activities?—Yes.

11565. And educatively, it is the best too, is it not?—Yes, educatively too it is very good.

11566. Working in your sphere, you do not in any way come into collision with official guidance?—No; on the other hand, we get whatever help we want from every department of Government that is around us. We have never come in collision, so far as I remember, with any department of Government in regard to service.

11567. *Rao Bahadur Muniswami Nayudu:* Are you in charge of any primary schools?—No, not in charge of them.

11568. You have long experience of the working of primary schools?—Yes.

11569. Have you seen any panchayat schools working?—No.

11570. You speak of panchayat schools started by the Cheyyar Taluk Board; have you any personal experience of those schools?—No; only what I have heard.

11571. Do you know under what Act the Taluk Board handed over the schools to the management of the panchayat?—I have the instructions here; I am sorry I cannot answer the question without a reference to the papers.

11572. On page 221, you say: "I would expect each village practically to support its own education." Can you say whether the schools handed over by the Taluk Board of Cheyyar to the village panchayat where handed over on the understanding that the whole cost would be met by the village panchayat? —I imagine they have a grant; I am not speaking of what is possible to do, I am speaking of what eventually ought to be possible; that is in answer to the question how you propose to finance them.

11573. Are you connected with any Local Board?—I was for two terms on a District Board; that was before the War, in 1913.

11574. You know that there is what is called the land cess levied from the ryots, so much in the rupee on the land revenue payable by them?—I am myself paying it.

11575. Do you know that after the Reforms, it has been increased from 1 anna in the rupee to 1 anna 9 pies in the rupee?—Yes.

11576. A portion of it is called the educational cess?—Yes.

11577. And that is intended for increasing the number of village schools?—Yes.

11578. Can you say whether the resources of the local bodies, as at present available, are sufficient to enable the local bodies to give each village a school?—From the cess alone, you mean?

11579. Yes?—I am suggesting a school which would be much less costly. If the teacher himself is partly self-supporting, he would not need so much assistance from a central fund like the local fund; besides, he would be paid in kind. I am suggesting a drastic reorganisation, which could not be estimated for on the present basis.

11580. May I ask you if it is in your knowledge that the tendency of the present-day village demand is to substitute the Board school for a private school existing in the village?—Yes.

11581. Do the villagers not demand a Board school, in preference to a private school existing in the village?—Yes, that may be the tendency; but the whole orientation of education is wrong.

11582. Would you, therefore, suggest that the villagers should be given the proceeds of the cesses that are levied and asked to run their own schools?—Certainly, I should favour it.

11583. I believe you have read the Village Panchayat Act?—Yes.

11584. Is there any provision in the Act which will statutorily compel the village to maintain a school of its own either with funds granted or raised by it?—I am suggesting a scheme.

11585. Under the present law?—I do not know what is possible under the present law. I am here trying to present a scheme which will be good for the whole country and which will entail considerable adjustment. For instance, I am asking for drastic cuts of grants from higher education. The present Act will not permit it and the present public opinion will not permit it. I am asking for a revolutionary thing.

11586. Do you think people will welcome any change involving extra taxation for the purpose of village roads or village schools?—It depends on the education of public opinion.

11587. From your experience of village life now, do you think they are prepared for such a responsibility being thrust upon them?—Again I must say that it depends upon education. Some villagers are anxious to get a branch school opened and they would be prepared to give labour or a part of the cost.

11588. Have you experience of any agricultural middle school?—No; I am suggesting that they should be started.

11589. Have you any experience of the Government agricultural middle schools at Taliparamba or at Anakapale?—I have heard of the school at Taliparamba, but I have not seen it.

11590. Some agricultural schools have been started in Chingleput; have you seen any of them?—I have seen the school in Chingleput; but it was started many years ago, some 30 years ago, and it was on old lines which I do not believe proved a success.

11591. Do you think there is a demand for such agricultural middle schools in the Presidency?—I do not know anything about it.

11592. You advocate them now?—Certainly, I do.

11593. And would you like a school of that sort to be started one for each taluk?—Yes, eventually.

11594. You know that the Government recommended having training schools for the training of teachers for village schools, one or two in each district, and giving stipends for about 40 boys for each class? Would you like those

training schools to be converted into the schools of the type that you contemplate, with training sections attached to them?—Eventually they should be absorbed in the larger scheme that I advocate.

11595. You have got experience of the villages. What is the state of the road communications of villages? Do you consider that satisfactory?—No, I do not consider them satisfactory.

11596. Do you not think that a very large number of villages are without any proper or adequate means of communication with the nearest market?—Quite.

11597. And do you think that if these communications are improved or restored, the economic prosperity of the villages as a whole will increase?—Certainly, it will contribute very greatly to prosperity.

11598. Do you also think that if these communications are put in order as early as possible, the possibility of having central schools to serve a number of villages within a radius of one or two miles is great?—You mean village schools?

11599. Yes?—I deprecate the drawing away of youths from their own villages. It is not economic necessity nor the lack of roads which makes me advocate the village schools; it is the psychological aspect. I should like the school to be taken to the village, not that the boys should be drawn away from the village for that very elementary education.

11600. But so far as the Presidency is concerned, elementary schools intended for the villages are of two types, one up to the 4th standard and the other up to the 8th standard corresponding to the middle school. Now, would you like to increase them with the object that boys who are willing to continue studies up to these standards may do so? To increase such schools would you like facilities for communication so that boys who want to read in the higher schools may go to them?—Quite.

11601. In that manner improved village communications will help in the spread of education in the higher classes in the elementary stage?—Yes.

11602. You also know that so far as provision of medical relief is concerned, we generally have a dispensary or a hospital at a taluk headquarter station?—Yes.

11603. And the attendance of medical officers in villages where they are urgently needed is very often not secured because there are no communications at all to such villages?—Yes.

11604. Would you therefore advocate the increase of facilities for villages even for the purpose of making available medical relief from taluk headquarters?—Quite.

11605. Would you put the expansion of village roads as one of the most urgent things to be attended to next to education, or even on a level with education in importance?—I do not know about the order of importance, but I should like to advocate that as soon as possible.

11606. You think something could be done by eliciting village interest in the matter of village roads and so on?—I think so.

11607. But you also consider that the initial expenditure necessary for constructing a new road may not be within the possibility of a village or many villages?—Of course, it depends upon the length of the road and the number of villages it passes through.

11608. Would you then advocate that wherever it is not possible for a village from its own funds to lay a road, assistance should be forthcoming from either the local bodies or the Government?—Yes. I have so much faith in the educational value of conferences and in a policy of making people help themselves that in all such cases I would advocate that as far as possible a proportionate charge be levied upon the villagers themselves, for instance, the Taluk Board or the District Board should say that they will pay four rupees for every rupee the village puts up either in money or in kind. It helps solidarity; it helps all the time towards the habit of people trying to

help themselves and it prevents this eternal dependence of our people on the State.

11609. Do you know that some of the District Boards are tending to work in that direction by cutting village contract rates by 25 per cent, the difference being met by the village either in the form of manual labour or other?—I know.

11610. And you think that is a right step?—It is a very good step.

11611. And would you advocate a liberal grant to these local bodies if from their available resources they could not meet the villagers' demand?—Yes, I would certainly.

11612. With regard to village sanitation, from your experience of the villages, do you not consider that they are becoming more insanitary, ordinary little villages?—They have been bad enough at any time in my memory.

11613. And do you consider that in some of these villages in delta areas, owing to the division and sub-division of the village homestead the facilities for cattle sheds and other things are becoming more and more difficult? Would you advocate that Government or some other authority should acquire land for the purpose of allowing people to build homes under more sanitary conditions and on extensive grounds in the villages?—Certainly, I advocate it wherever possible. There are practical difficulties of course.

11614. Do you consider that congestion in the villages should be relieved as early as possible, especially in delta areas, by expansion of the village sites?—Yes, wherever possible.

11615. You are aware that under the Village Courts Act a panchayat is constituted by the Divisional Officer after a census of agricultural and other occupations in the village and that their institution is mostly on the elective basis. You are also aware that Forest Panchayats are constituted, but the persons who elect are persons who own cattle and who are interested only in grazing. Now, a village includes people other than those who do not possess cattle and who have no interest in that forest. With regard to the co-operative societies it is only those people who form a society and take the responsibility for the money who can be members and who can elect a panchayat and other people have no interest in it. You are also aware that moneylenders in the villages are averse to the formation of co-operative panchayats and do not join the co-operative panchayat. Keeping these points in view, do you consider it possible to have one panchayat to function adequately so far as village units are concerned, so far as rural credit is concerned, or do you advocate separate panchayats with special interests represented on them?—When I advocate the simplification of the machinery I have in mind two things. The first is the personnel; only a limited personnel is after all available in the village. The second is the facilities for supervision or non-official assistance. Those who want to help the village and serve the village should have to deal with a unified machinery. I quite see the point that you have mentioned now. With regard to co-operative societies essentially with unlimited liability, in regard to the primary banks, our experience is that it is always best to get the whole village; it leads to better financing of the society as it will have a larger aggregate property valuation. The co-operative society because of that unlimited liability and the leverage thereby available is able to have greater power. That is our experience too, for instance, for the starting of a school or for sitting as an arbitration court. When a co-operative panchayat sits as an arbitration court to decide disputes between members, whether they be money differences or other kinds of differences, certainly the decision of the co-operative panchayat carries much greater weight because of the fiscal leverage it has. On the other hand the panchayat under the other Act has judicial powers vested in it. That is why I say it is a problem to be carefully considered with a view to simplify the machinery. I am not prepared to answer off-hand a question like that. I should certainly consider it somewhat unfortunate that the poor villagers who are illiterate should be faced with so many organisations as you have mentioned.

Mr. K. T. Paul.

11616. But there is nothing to prevent an intelligent villager taking part in all the panchayats?—Quite.

11617. Have you any panchayats in villages where there are moneylenders whose interests clash with the co-operative society?—Yes.

11618. Have you been able to get their co-operation?—Very seldom.

11619. *Sir Ganga Ram:* You seem to know much about the wells. How much area does each well command?—That depends upon the depth.

11620. What depth do you generally get in these districts?—50 or 60 feet in the bad taluks.

11621. How much area can you irrigate?—A large well of about 30 feet by 30 feet or so in extent will probably command 2 or 3 acres of land for intensive cultivation.

11622. But does it pay?—It does not pay.

11623. Then why do people work it?—I advocate it because in the hot season it would command an acre or two. In the rainy season it would command 5 or 6 or 7 acres.

11624. How many pairs of bullocks?—2 pairs.

11625. How much would you get from this well irrigation per acre, can you tell me?—Roughly an acre grows a net 130 or 140 rupees.

11626. Per acre?—Yes.

11627. You grow garden crops?—Garden crops, fodder crops and cereals.

11628. The Mettur river project is under consideration?—It is one of the sanctioned projects.

11629. It will not benefit your purpose?—No.

11630. Have you represented that to Government?—Yes, we have done so.

11631. You have said that there are 8 million people. What acreage do they possess, from how much to how much?—I am talking of the whole of India.

11632. Can you give the figure for this Presidency?—No, I do not know.

11633. You seem to be not very fond of the Agricultural Department. You say there is only one good thing which they have done, *viz.*, seed distribution. How much good has it done?—I do not want to give such an impression. But that is only one thing which the department have done.

11634. How much water is required for this particular kind of seed? After all water is a valuable element?—Yes.

11635. Does it require more water or less water?—Average I should say.

11636. The poor man, you have said, weaves yarn. How much does he get from his work on the loom?—I do not know; it depends upon the counts.

11637. Supposing he works six hours a day, how much does he get on the average?—It depends upon the material he uses.

11638. Four annas?—Much more than that, six or seven annas a day.

11639. Have you not represented that to Mahatma Gandhi; he is very fond of the *charka* which gives only one anna a day?—That is spinning, this is weaving.

11640. You said you would have a Land Acquisition Act in this Presidency?—I did not say that.

11641. *Sir Thomas Middleton:* When you said a crop was worth 130 rupees did you mean per acre?—Per acre.

11642. Did you include the labour of the owner and his family?—No; I only reckoned out-of-pocket expenses of cultivation, not land revenue or anything like that.

11643. *Dr. Hyder:* In answer to the Chairman you said you wanted to advance all along the line. I find that the different objectives are education, health, debt, redemption, arbitration, temperance, agricultural improvements, marketing, subsidiary industries, etc. You said also that you had at one time

a staff of 42 Secretaries. I ask whether for such an advance you have the necessary number of workers in this Presidency?—It depends upon how far we can exploit and mobilise voluntary labour, how far we can get members of District and Local Boards to enter into the spirit of such a thing and put their shoulders to the wheel. If you succeed in putting these responsibilities on the conscience of our educated community it could be done.

11644. Would you make use of the University students?—Yes.

11645. It is only in the vacation time that the students can be utilised?—When they get habituated during vacations it is presumable that they would do something in their after-life.

11646. As regards the scheme of education which you have sketched at page 228 I ask you to follow the career of a boy and correct me if I am wrong. You have a boy in the village school?—Yes.

11647. From the village school he would go to the taluk school?—Yes.

11648. From the taluk school he would go to the agricultural middle school?—No; the taluk school is the agricultural school.

11649. From the taluk school the boy would go to the high school?—Very few of them, only exceptional boys.

11650. Your village schools would be under your farmer teachers?—Yes.

11651. Your taluk schools, in other words, your agricultural middle schools, would be staffed by the graduates of agricultural colleges. Do you not think that there is a very great disparity as regards the qualifications of the teachers in these first two schools?—Yes; there is bound to be.

11652. You think it is desirable to have such a disparity. Firstly in your lower secondary school the teachers are to be graduates?—No, graduates of the Agricultural College.

11653. They are graduates; they hold a Degree in Agriculture?—Yes, if you put it like that.

11654. I am quoting from memory from a book referred to in your evidence and I hope you will correct me. It is said in the Report of the Committee of which you were a member that the objection which the parent in the rural areas takes to his boy being taught agriculture is that the teacher knows nothing about the matter and the parents know far more?—Quite right.

11655. When you have a farmer and a neighbour teaching agriculture and also imparting some literacy to the boys in a particular village, do you think the other people will approve very much of the work done by the teacher or will they say, "He is one of us; he knows no better than we do?"—In the village school agriculture will not be taught as a school subject.

11656. I thought you were trying to give an agricultural bias. I am not thinking of agriculture as a subject but giving an agricultural bias to your village school?—In the case of the average villager to send the boys to the school at all is a big thing.

11657. Such a farmer teacher would command more respect and confidence than the ordinary teacher we have at the present day?—I should say so, because he has been through the middle school.

11658. On the question of the medium of instruction in relation to education, I gather that, in the primary schools and in the secondary schools which you call the agricultural middle schools, you would have the vernacular as the medium of instruction. Then in the high school you would introduce English?—As a second language.

11659. I was going to tell you that the only area at present in India in which an attempt on a grand scale has been made is the State of His Exalted Highness the Nizam. I was going to ask you what is your opinion of the success or otherwise of that system in that State?—I have no knowledge of the work there. I see that other countries like Japan and the countries of Europe find it possible to get an education without the English language. Take France; take Denmark.

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11660. English is one of the optional subjects at present in the Nizam's territories. But would you like your medium of instruction to be the vernacular?—The mother tongue.

11661. *Dr. Hyder:* You said also that certain matters have been neglected since the Reforms came into being. I should like you to tell me what those particular matters are, coming within our terms of reference; is agriculture one?—I was talking with reference to agriculture; I may be mistaken, but it is my impression that the tendency is to look at party prospects rather than the intrinsic needs of a particular line.

11662. I am now concerned with the distribution of provincial resources; that is the one test to go by. Do you think that since the Reforms enough money is not spent in the development of education, agriculture, etc., or rather do you think these matters have been neglected?—It is not a question of neglect; it is a question of apportionment between two competing demands. As a matter of fact India is very much in arrears as regards many things.

11663. Is there a rivalry between different tracts comprising the Madras Presidency?—Not tracts, but different lines of work. If I may say so it is only human to spend more money on something which appeals more to public imagination.

11664. I am not quite sure what are those spectacular things which you are referring to. I wish to be within the terms of reference. I ask again whether more money has been or has not been spent upon the development of agriculture?—Mr. Chairman, I would prefer not to answer that question, because it is really entering into a discussion of politics, particularly into the policy of an administration which is just closing. My recommendation might be construed into absolutely general terms. Whoever is the party in power there will be always the tendency to support certain lines to the exclusion of others. I am speaking on that broad basis.

11665. Then, I shall not refer to that. With regard to one allied matter, if you had a certain sum of money, would you rather spend it on the construction of roads than on the construction and equipment of schools? Which of these two would you prefer, roads or schools?—It is very difficult to answer a question theoretically like that. Off-hand, I would say I should put more money into education.

11666. Let us pass to another matter, the expenditure of public funds and the results thereof so far as education is concerned. I understand you are for giving education though not for creating literacy?—I am for more literacy.

11667. If you had more money you would go the whole way?—Yes.

11668. I want now to take up the point of relapse into illiteracy. Is it your object to create a sort of divine discontent in every peasant's household in your Presidency, and spend the resources that are available on an extension of primary education?—I took some trouble to study the methods pursued in the Southern States of America, where the situation of the Negro was pretty much what ours is to-day. In two generations they pushed up literacy to something like 70 per cent; I cannot swear to the figure, but that is my impression. They went about it by the process I mentioned; they did not worry about conferring literacy; they gave them so many ideas pertaining to their ordinary needs of life, that the peasants were stirred up and then began to demand literacy.

11669. Precisely; that is how I understood you want to go about it here. But I was calling your attention to the danger of relapse into illiteracy. If you had a peasant household in which there prevailed a divine discontent, the parents themselves would see to it that the boys went to the school and took up some kind of reading, the parents themselves having seen the desirability of such a course. Do you think so?—Yes.

11670. The danger of relapse into illiteracy would be less if there prevailed such a divine discontent which would grow by giving instruction?—Yes.

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11671. And if you had unlimited funds you would, of course, undertake the process of educating both the parents and the children?—I would start on it at once, in fact.

11672. With regard to another matter that has been raised, the cost of graduates, I ask you whether it is a fact that in this Presidency in certain places you have village *karnams* or village accountants who are graduates serving on a very small salary?—It must be rare.

Dewan Bahadur Raghavayya: I know of no cases.

11673. *Dr. Hyder:* What would you pay your teachers?—Which teachers?

11674. The farmer teachers and graduates of the agricultural colleges?—I think the situation in the country has already approached such a stage that graduates would be willing to take anything they can get, and the farmer teachers I advocate would be very happy to get what they can. I think the money value put upon University education hitherto has been a false quantity; it is slowly righting itself now.

11675. It is only a question of supply and demand. If you have only two doctors in a village you will have to pay heavy fees; but, if the number increases the health of the village will increase and the fees will go down?—Yes.

11676. Are you thinking of any such experiments as are carried on in Germany by way of Continuation Schools?—I do not know the particular schools you mention. Is it something like the Folk Schools of Denmark?

11677. Something like them, the boys go to the Continuation School as well as attend to their work either at the factory or the farm; they attend the school either during certain periods of the day or certain days in the week, and are given instruction in their profession and general education?—I have seen such a thing in Dresden. I would favour it. But that would be mainly for the industrial classes; it would be very difficult to do that for our masses. I am thinking of elementary education for the immense number of 250 millions.

11678. If we had these evening classes we might prevent the waste which arises from relapse into illiteracy?—How would you organise them in the villages? We might have seasonal schools, summer schools; we might organise such; we do that in our own schools.

11679. With regard to the question of cost, I was wondering whether you would favour a proposal in this Presidency that your land revenue should be standardised at 25 per cent, and the difference between the 25 per cent and the present assessment should be made available for the purpose of local development, purely for locally beneficial purposes, *e.g.*, education, roads, health, sanitation, etc.?—The land revenue comes from the villagers now; why should the urban population get the benefits of it; why should a pittance only be given to the villages? I should say the first charge on land revenue should be rural improvement, because it comes from the villages.

11680. Quite so, but you would not take up the extreme position that the whole of the land revenue should be earmarked for the purposes which you have in view; a certain portion should be available for general purposes. The difference between the present assessment and the standardised 25 per cent should be earmarked for the purposes of the particular locality where the revenue is collected, so that the people who pay the money will get the services right before their eyes?—I have not thought it out that way.

11681. On a point of information. You have referred to the Economic General Staff in Germany. I understood you to say that the Economic General Staff has cleared the debt?—It has not yet been cleared up.

The debt that arose from the financing of the War has been cleared by the inflation of the currency; that task was certainly not performed by the Economic General Staff.

(The witness withdrew.)

Mr. K. T. Paul.

Mr. D. G. MUNRO, B.Sc., General Scientific Officer, United Planters' Association of Southern India, Madras.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—In the present organisation of the Scientific sections for the various products, rubber, tea and coffee, advantage has been taken as far as possible of existing sources of information and research. The results of the Rubber Growers' Association research schemes in Ceylon and Malaya are available to South India planters. Opportunities are given to United Planters' Association Rubber Scientific Officers to visit these countries and Java in order to keep up with recent research.

The same applies to tea. United Planters' Association Officers have had facilities to visit the Indian Tea Association Experimental Station at Tocklai and get the results of research work done there.

Both rubber and tea are fortunate in having so near at hand large areas of these particular products. These large areas are capable of spending a greater amount of money on research and scientific work generally and the results can be applied locally to the smaller areas in South India which by themselves could not afford to give opportunities for research on a large scale.

Coffee is not so fortunate as tea and rubber in having research work done so close at hand and it is, therefore, more difficult to obtain results and information. Consequently coffee should be spending relatively larger amounts in order to provide methods for growing the crop more economically and to stop the reduction in area which is going on. The area in 1896 was over 300,000 acres while the average for the last five years is 130,000 acres.

Generally what happens is that research is centralised in larger areas where resources are greater and the information so obtained is applied by scientific officers to smaller areas.

The same principle is seen in the structure of the Agricultural Department in India, *viz.*, Provincial Departments and a Central Institute. The Central Institute should be strengthened considerably not only to supplement the research work done by Provinces which can afford it, but also to carry on research work themselves and act as a clearing house for information to Provinces which have not got resources for research.

Funds for the United Planters' Association of Southern India scientific sections are raised mainly by the industries concerned and supplemented by Government grants. Such Government assistance is necessary and should be continued. Coffee should receive special consideration. It is a crop which can be taken up much more easily by the man with a small amount of capital than either tea or rubber and is, therefore, of special importance.

QUESTION 2.—AGRICULTURAL EDUCATION.—(*vii*). The course of study at the Agricultural College, Coimbatore, is a 3 years B.Sc. Course. Graduates selected for departmental work should receive a further year's post graduate training at Government expense in such subjects as book-keeping, a certain amount of costings and the economic side of farming generally and also teaching methods.

The latter I consider, is of great importance as a number of these men will act as demonstrators to illiterate people. An improvement in their methods of expounding knowledge must help to increase the effectiveness of propaganda and demonstration work.

QUESTION 9.—SOILS.—(*a*) (*iii*). A considerable amount of work has been done in the prevention of soil erosion. The main methods are:—

1. Cover crops and cultivation.
2. Contour trenching and silt pits.

3. Bunding.
4. Terracing.

QUESTION 10.—FERTILISERS.—(*a*). Fertilisers are being used more and more in the planting districts and a further extension in their use could be profitably made. Cattle-manure is difficult to obtain. Organic manures like fish, bonemeal and various poonacs are largely used and artificial fertilisers are in demand.

Great improvement in yields have been noted and good yielding estates may be kept at a high average for many years.

One coffee estate which has been manured regularly and well has averaged 6 cwts. per acre for the last decade. Estates not properly manured have gone back, *e.g.*, one (not more than 3 miles from the above mentioned one) which in the decade 1905-1914 averaged 80 tons of crop annually has gone down during the decade 1915-1924 to 60 tons annually. While the total acreage of the estate has actually increased, manures had been scrimped and a general deterioration followed. Yields of tea also known to have increased very considerably by careful and continuous manuring.

(*e*) The effects of manuring with different manures have not been sufficiently investigated. With perennial crops the initial temporary effects of manures are of more importance than is the case with annual crops. The final and cumulative effects of different manures on crop production should also be more thoroughly investigated.

The effects of different manures on pests and diseases are also of importance with permanent crops. Interesting results have been obtained in coffee at Sidapur Station. The number of borer (*Xylotrechus Quadripes*) trees removed every year has been kept over a period of 5 years. They fall in the following order:—

Mineral manures. (No nitrogen). .	51	trees per acre per annum
Control plots	28·2	" " "
Nitrogen manured (organic poonac, etc.)	23·4	" " "
Bulk compost manured . . .	13	" " "

The result of 1925 which was a bad borer year ran in the same order:

Minerals (No nitrogen) . . .	88	trees per acre.
Controls	66	" "
Nitrogen	34	" "
Composts	6·5	" "

QUESTION 11.—CROPS.—(*a*) (*i*). There is no doubt but that planters' crops can be considerably improved. This is being done in rubber by selection and budding. Very little has been done in tea and a start has been made in coffee by selecting different types, self-fertilising and examining the progeny.

(*c*) Industries where the rainfall is too heavy and (where pests and diseases are specially bad), coffee does not thrive and has been and is being replaced by tea.

Mr. D. G. Munro.

Oral Evidence.

11682. *The Chairman:* Mr. Munro, you are General Scientific Officer, United Planters' Association of Southern India?—Yes.

11683. You have your headquarters at Madras?—At Coimbatore.

11684. You have put in a note of the evidence and we are greatly obliged to you for that. Do you wish to make any remarks of a general nature, or would you like me to ask you a few questions?—I have no remarks to make.

11685. Will you tell the Commission what your own training and previous posts have been?—I am the son of a farmer, took my B.Sc. Degree in Aberdeen University. After demobilisation in 1919 I joined the staff of the Aberdeen College and worked on their staff until October 1920, when I came out to India and was posted to Madras; I stayed at Coimbatore for a few months and then took over charge of the Fifth Circle at Trichinopoly; I came back in 1922 to the College as Assistant Principal and Superintendent of the Central Farm; in August 1922 I took over my present office.

11686. Have you at any time been a member of any public service in India?—No; except in the Agricultural Department.

11687. You are still on the list of the Agricultural Department?—Yes.

11688. And you are lent for this purpose?—Yes.

11689. The crops with which the United Planters' Association deals are tea, coffee, rubber, cinchona and spices?—Yes.

11690. You have amongst your constituent members growers interested in all these crops?—Yes.

11691. In the memorandum which you have placed before the Commission on page 255 you give a general indication of the way in which the organisation is financed. Are the contributions made on an acreage basis or on a crop basis, or how?—We get a certain sum of money from the Madras Government which goes to the Scientific Department; the extra money required for rubber is raised by an acreage cess on rubber, the extra money required for tea is raised as an acreage cess on tea, and the same with coffee.

11692. Are these funds pooled?—No, they are not pooled.

11693. Coffee for coffee and tea for tea?—Yes.

11694. Are the operations of your society entirely confined to this Presidency?—No; there is quite a considerable amount of tea in Travancore and also some rubber. There is also some rubber in Cochin, coffee in Coorg and coffee in Mysore.

11695. How far are you in touch with the Indian Tea Association?—We are in touch with them to the extent that we pay a contribution of Rs. 10,000 a year, in order that we may get their results, and for the privilege of some of our tea officers there to see what they are doing.

11696. The Indian Tea Association of Calcutta with its headquarters in that city, does carry out research work for its members, does it not?—Yes.

11697. Are you satisfied that you are sufficiently in touch to get the full benefit of the research work carried out by that body?—I think we are, as far as possible.

11698. Can you tell the Commission how it comes about that different planters in this Presidency and in contiguous areas have organised a separate research in South India and have not been satisfied with the research carried out by the Calcutta organisation?—The idea down here is to keep the association as a complete association and treat the scientific department as part of the association; thus keeping the members together, as far as possible.

11699. I am not sure whether I have made my question clear. I gather you are doing separate research in Madras and I wonder how it came about that your tea-planting members, rather than create their own organisation here, have not depended upon the Calcutta organisation for research?—We do

depend upon them to a certain extent, in the matter of tea fermentation for instance.

11700. The fundamental problems are carried out there?—Yes.

11701. Their application is dealt with here?—Yes.

11702. Is it necessary in your view to do it here, having regard to the difference in environment?—Yes, it is; the climatic conditions make a considerable difference.

11703. Do you care to express any opinion as to whether the acreage cess which is levied restricts the membership at all?—I think about 90 per cent of the tea planters contribute towards this cess.

11704. And you do not think that the extent of the cess repels any considerable proportion of planters?—No.

11705. Upon what basis are the Government funds given to your association?—Up till 1924, the planting section was run by the Government. It was a planting district under the Director of Agriculture, and run by a Deputy Director of Agriculture. In 1924, the planters decided that they wanted more scientific aid; the Government decided that they were not going to give any more money than they could possibly help, and they cut the amount of money which they were spending on the planting districts at that time.

11706. At the present time, you are still getting Government funds; are you not?—Yes.

11707. A fixed sum annually?—Yes.

11708. Whatever you collect amongst yourselves?—Yes, whatever we collect.

11709 Are you in touch with the Agricultural Department of this Presidency?—Yes, as far as possible; we get a considerable amount of help from the Agricultural Department.

11710. Have you any proposals to make for closer working?—I do not think it could be closer.

11711. In your experience, has this principle of organising research according to crops been a success?—As regards South India, the area of the different crops is relatively small, and we cannot afford to put up the money to keep a big enough organisation going on to do fundamental research. The Agricultural Department could not give us all the information we required, and the next best thing was to go to the big associations where they had big acreages and could afford to put up money for fundamental research, and get their results.

11712. Then, is your own laboratory divided into sections according to different crops or how do you arrange your work?—The organisation now is to have different scientific officers in tea, rubber and coffee. The Rubber Specialist has got an experimeintal station and a laboratory at Mundakayam; the Tea Scientific Officer has got an experimental station and a laboratory at Nelakottai; the Mysore planters and Government are starting a fairly big experimental station for coffee.

11713. What are your own duties?—Touring and advisory work.

11714. Are you responsible for keeping these various branches in touch?—No.

11715. Your work is entirely touring?—Yes.

11716. And advisory on the spot?—Yes; it will continue until March of this year, but with the recruiting of different officers new stations have been opened at convenient places and the old stations have been shut down.

11717. On page 255 of your note, you are talking about agricultural education, and you give your views about the need for selected graduates receiving a further year's post graduate training at Government expense in various

subjects. Do you hold that view in reward to the needs of your own association, or is that a general view?—It is a general view.

11718. Under the heading of Fertilisers you give what appears to me to be very interesting and important results of experiments upon the effect of various manures upon the incidence of pests. When were those experiments carried out?—From 1919 up till last year.

11719. Could you give the Commission any indication of the comparative costs of these several manures?—Take the most efficient in relation to pests, bulk compost; that gave only 13 trees affected per acre?—That manure was gathered only in small quantities, from the roadsides, cart stands, drains and road cuttings.

11720. How about its efficiency as manure?—It is fairly good.

11721. You cannot give any indication of its cost as compared with other manures; that has not been worked out?—I have not got it here but I can get it.

11722. Have you experience of the areas in which small cultivators are growing the same crops as planters, on holdings contiguous with the planters' holdings?—In Coorg, about half the coffee is held by Indian planters and in Mysore the bulk of the coffee, I should say about two-thirds.

11723. Run by small people?—Yes.

11724. Ordinary cultivators?—Yes.

11725. Have the practices of the planters been copied at all by the small cultivators?—To a certain extent, but they certainly do not cultivate to the same extent as the European does.

11726. They do not copy so freely?—They do not.

11727 Is that due to the limitations of their economic position, or is it due to a slightly greater conservatism?—On this particular point of the borer, the average Indian cultivator will keep a great deal more shade on his coffee, in order to keep out the borer; the consequence is that with heavier shade he gets less crop; he is not willing to risk the loss of his trees by borer in order to get a bigger crop.

11728. He cannot afford to take the risk?—He could, really, if he got a bigger crop, and had more money at his command to replant up any bored trees there may be.

11729. Has your association a representative organisation or representative individuals with whom it is in touch in the London or other markets?—Yes, the South Indian Association.

11730. They are in touch with the South Indian Association; is it within your knowledge whether by that means, complaints from the consuming markets as to the way in which the produce is packed or graded, or as to its condition, come to the ears of the planters?—It may come that way, or it may come through the agents who are handling the goods at the other end.

11731. Is it your impression that planters get early and reliable information about any complaints?—Yes.

11732. You do not suggest any improvement in that direction?—No.

11733. You think that marketing information is always at the disposal of planters?—Yes, it is quite efficient.

11734. *Sir Ganga Ram:* What is the minimum height from sea-level for growing coffee, tea, rubber and cinchona?—Coffee will grow up to a height of 6,000 feet.

11735. Minimum?—It will grow from 1,000 feet up to 6,000 feet.

11736. Tea?—From sea-level up to 6,000 feet.

11737. Rubber?—Rubber is mostly a low country crop up to perhaps 2,000 to 3,000 feet.

11738. Cinchona?—It is grown in Anamalais at 3,500 feet and in the Nilgiris at about 6,000 feet.

11739. With regard to cinchona there is a great demand for quinine. Do you extend the cultivation of cinchona?—They are doing so now. Government are opening up a very large block on the Anamalais under cinchona.

11740. Would these things grow on a sloping ground or on flat ground?—Either.

11741. They can grow on flat ground?—Yes.

11742. I thought sloping ground was necessary for drainage purposes?—If it is a question of drainage, give it drainage and cinchona will grow.

11743. Do you grow any of these trees?—Yes.

11744. Which do you grow? Do you grow potatoes and things like that?—No.

11745. Do I understand from this that your Government grant a subsidy or a loan?—It is a subsidy.

11746. How much is it?—Rs. 28,000.

11747. For the whole Presidency?—For the whole Presidency.

11748. Do you export the whole of your produce or is there anything spent here on home consumption?—There is a considerable amount of tea consumed in India nowadays. I think, the figure given by the Indian Tea Cess people is about 50 million pounds.

11749. You make all black tea?—All black tea. Practically no green at all.

11750. Any coarse leaf made into green tea? I mean we were told that there is a great demand for it and they make green tea from coarse leaf?—I think it pays better to make good quality black tea and send it to the European markets.

11751. Do you take special steps to collect farm yard manure?—I remember, they used to construct sheds, five miles apart, where the carts used to stand, and collect it.

11752. Do you do that?—That is still done in the planting districts.

11753. *Sir Thomas Middleton:* You deal with all these planter's crops. Which one gives most work?—Tea.

11754. That is because the area is much larger?—The area and the question of manufacture as well. It is a very hard one; a very intricate one.

11755. Now you refer to this experimental station in Tocklai. What is the nature of the work done there? Is it experimental work or manufacturing work?—Both. They do experimental work on the amount of cultivation and the kind of cultivation as well as experimental work on manuring and also on methods of pruning and manufacture.

11756. Is Tocklai a fairly representative station? Where is it?—It is in Upper Assam.

11757. Then it will certainly not represent the conditions in the Anamalais?—No.

11758. The point I was going to ask was whether it represents the cost of cultivation?—There are many fundamental things. Take the question of manuring, for instance; we have got a different climate down here and the possibilities are we may find a better time to put on manure than the time it is done in Assam.

11759. You think much is done for improvement in tea? Where does the tea planter of the south get his seed from?—Northern India mostly.

11760. Are the varieties in Northern India numerous or very few?—I know of no pure strains. But there are different varieties. There is the

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China, the Burma which is dark leaved and then there are three other indigenous light leaved varieties.

11761. I have heard of a special hybrid?—I do not think anybody knows it really. It may be a high elevation Burma or it may be a well-grown China or it may be a cross between China and one of the Assam indigenous varieties.

11762. I gather from what you say that practically no work is done on the improvement of the tea plant?—Not on the improvement of the tea bush itself.

11763. What are the coffee varieties?—The most popular variety in South India is Arabica. Some years ago a planter introduced a hybrid between Arabica and Liberia and it had not proved such a success as was anticipated. At the present time there is Kents hybrid which is in great demand, but there again the types are many as selected strains which come true to type have not yet been developed.

11764. Have the tea planters of this district begun to resort to manuring to any extent?—In some districts very largely.

11765. In the Anamalais?—Yes. The High Range have not to any great extent used it, but the High Range are carrying on a number of experiments and if they do start manuring they will have facts and figures to go on.

11766. Are they experimenting with organic manures or the ordinary commercial artificials?—Artificials and organic manures, both.

11767. Are there any indications yet of what types of manure are going to suit them?—Organic is more liked for the simple reason that it will not be so easily washed out of the soil if the manuring is done early in the season; but if the manuring is postponed till after the monsoon that does not hold to the same extent.

11768. But is there any indication that the soil growing tea is likely to want either phosphate or potash?—Only that deficiency of potash is connected in some way with disease.

11769. It responds to treatment?—Yes. The Indian Tea Association has done a fair amount of work on that and reckoned the ratio at 1: 1: 1 of nitrogen phosphate and potash as sufficient.

11770. *Dr. Hyder:* Does the United Planters' Association of Southern India possess any other scientific officers besides yourself?—There is one in rubber and one in tea.

11771 What is the total area that you three gentlemen have to look after?—188,000 acres.

11772. Including rubber, tea, coffee, cinchona and spices?—Yes.

11773. These two other officers are also lent officers?—No; they are engaged entirely by the Planters' Association.

11774. You are the only lent officer?—Yes.

11775. There are large coffee estates belonging to Indians. Who gives them scientific advice, for instance in Coorg, Mysore and perhaps Malabar? —In Mysore, the Mysore Department. In Coorg I advise.

11776. So that you have to advise both the members of the Association and also the Indians who are not members of the Association?—Very few Indians ever ask for advice.

11777. So they get on without any advice? With regard to the matter of funds you said in answer to a question put by the Chairman that the funds for the different industries for the purpose of research and also for the purpose of organisation were raised from one or two sources. On acreage only?—Acreage.

11778. Are you not aware that there is an Indian Tea Cess Committee which raises about 12 lakhs of rupees?—That is for propaganda only.

11779. Is no amount spent on research?—No.

11780. You are sure?—We do not get it.

11781. It is because of the predominance of the tea merchant's interests in Northern India. I see your association is linked up with the Tea Association sitting in Calcutta. From my papers here I find that from the acreage the tea industry was only able to raise Rs. 80,000 while from the cess on the export of tea they raised about 12 lakhs of rupees?—I think that is the Indian Tea Cess which money is only used on propaganda work. The amount for the research work is raised by a special eight anna cess. Yes; that was only Rs, 80,000.

11782. *Sir James MacKenna:* Is it not the case that shortly the Association is going to have its own officers and you will be reverted to Madras? —Yes.

11783. Will they run the whole thing themselves?—Yes.

11784. Will the subsidy or grant from the Local Government be continued? —I do not know. It should be.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Friday, the 13th November, 1926, at Madras.

Friday, November 13th, 1926.

MADRAS.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.
Sir JAMES MACKENNA, Kt., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU.
Rao Bahadur B. MUNISWAMI NAYUDU GARU. } (*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH. } (*Joint Secretaries.*)

Mr. N. MACMICHAEL, I.C.S., First Member, Board of Revenue, Madras.

Replies to the Questionnaire.

QUESTION 5 (*b*).—The existing rules under the Loans Acts are liberal both in regard to security, interest and remission in cases where the works fail from causes beyond the borrower's control. The popularity of State loans is evidenced by the fact that during the past ten years the amount of loans advanced to cultivators has increased from 7½ lakhs to 37 lakhs, as seen from the statement appended. There is no doubt that larger allotments can be spent as the ryot is aways ready to borrow. Even at present, however, it is difficult to ensure that the loans taken for some purposes, especially those for the purchase of cattle, are spent on the purpose for which they are granted. Relaxation of the rules would no doubt be welcomed by the ryot but would only be possible at the expense of the general tax-payer.

Fasli year.	Amount of Loans advanced.			Number of ryotwari pattas.
	Land Improvements Loans Act.	Agriculturists' Loans Act.	Total.	
	Rs.	Rs.	Rs.	
1334	17,15,856	20,03,807	37,19,663	4,861,148
1333	17,24,680	18,37,781	35,62,461	4,861,148
1332	7,60.647	7,20,480	14,81,127	4,869,373
1331	8,22,255	13,15.956	21,38,211	4,869.373
1330	7,45,903	8,81,686	16,27,589	4 862,005
1329	5,89,543	8,66,708	14,56,251	4.222.543
1328	2,83,811	7,55,551	10,39,362	4,222,543
1327	1,98,179	6,26,393	8,24,572	4,222.543
1326	2,15,859	5,28,423	7,44,282	4,222,543
1325	2,39,721	5,11,530	7,51,251	4,222,543
TOTAL .	.	...	1,73,44,769	45,435,762
Average for 10 years.	...	...	17,34,477	4,543,576

The average per pattadar . $\frac{17,34,477}{4,543,576}$ of a rupee
= Re. 0 6 1 nearly.

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Question 7 (*a*), (*b*) and (*c*).—I have no suggestions to make beyond those contained in the appended memorandum which was prepared before I was aware of the exact form which the question would take.

Memorandum.

Fragmentation of holdings is inevitable in such a country as India which is mainly dependent on agriculture for the support of its population. The spirit of the Hindu Law and of Indian agriculture favour a wide distribution of the land and its cultivation by peasant farmers. Fragmentation of holdings is therefore inevitable and the revenue system which has been framed to suit the sentiment and tradition of the population has necessarily to provide for such fragmentation. The essence of the ryotwari system which is in force in this Presidency is that each individual holder of land pays land revenue in proportion to the extent of his holding and to the quality of the soil. The Government looks to him independently for the payment of such assessment and in consequence, does not prevent him, but, on the other hand, actively assists him in sub-dividing the land according to his enjoyment. Such separate sub-division and enjoyment in turn give to the owner of the land certain privileges not only in the administration of the revenue laws and regulations but also in other respects.

2. There are no reliable statistics to show the extent to which fragmentation of agricultural land has proceeded in this Presidency. There are, of course, the statistics relating to holdings. Lands on ryotwari tenure are held under 'patta' and a *patta* may be in the name of a single individual or jointly in the names of several. These *pattas* are divided into grades according to the total amount of the assessment payable on each. The statistics of the number of holdings and the average extent of the holding in each of these grades during the last two decades show a tendency on the part of the smaller holdings to become even smaller, but no useful or accurate deductions as to the economic condition of the agricultural population can be drawn from them. A man may hold more than one *patta* and a joint *pattadar* may in addition have a *patta* or *pattas* standing in his name alone. Most of the smaller ryots have also subsidiary occupations. The figures give, after all, only the average size of a holding. This may itself be fragmented, that is to say, may consist of tiny plots situated in different parts of the village.

3. To a certain extent the increase in small holdings cannot be avoided. India has always been, and will, for a long time, be a purely agricultural country. With the establishment of a settled Government and with the assurance of peace and security of person and property there has been a general increase in population. The possession of land, however small the holding, is still considered as giving the owner of it a status in the village. There is therefore a general ambition to possess lands. This partly accounts for the increase in the small holdings.

4. It is difficult to lay down any definite rules to determine in what cases division of holdings is undesirable. The mere size of the holding is in itself no test; the real evil is the lack of arrangement by which holdings, large or small, consist of separate plots of land scattered more or less over the whole village area, perhaps in all directions from the home of the cultivator. It is difficult for a ryot to cultivate cheaply and properly a holding divided into scattered blocks. Unnecessary ground has to be covered by the workers, by the bullocks and ploughs and by the owner supervising the work: the smaller the holdings and the smaller and more scattered the blocks, the worse the situation becomes. The question is whether sub-division and fragmentation have been pushed so far that the land has been parcelled out in such a way that in many cases a large proportion of the peasant proprietors have not got 'economic holdings' or in other words, whether the holdings have been fragmented in a way for which there is no economic justification and whether the bulk of the land has been put outside the scope of effective cultivation or economical organisation.

There are no accurate statistics, but judged with reference to agricultural economics there is undoubtedly a large number of holdings that are too small

and too fragmented and it is impossible to contest the proposition that a large number of ryotwari *pattadars* subsist on 'uneconomic holdings.' It is not easy, however, to determine what is an 'economic holding' and the question when a holding becomes 'uneconomic' will depend on local conditions, the description of land, the fertility of the soil, the nature of the crop and the standard of living of the ryot, and it may be doubted whether fragmentation has gone to such an extent in this Presidency as to put the bulk of the land outside the possibility of effective cultivation or economical organisation.

5. Public attention in this Presidency was drawn to the subject of fragmentation of holdings by a resolution moved by the Hon'ble Mr. A. S. Krishna Rao in the local Legislative Council in May 1917. The resolution was in these terms: "This Council recommends that His Excellency the Governor in Council be pleased to consider the desirability of checking the minute subdivision of agricultural lands in this Presidency." In moving the resolution the Honourable Member threw out a suggestion that economic holdings might be formed by re-grouping the fragmented lands. This proposal to declare agricultural land below a certain limit indivisible and impartible was opposed by two leading non-official members. Government, however, accepted the resolution and undertook to consider the matter and to see whether any practicable steps could be taken in the direction suggested.

6. About the same time, Mr. Keatinge, the Director of Agriculture, Bombay, was interesting himself in the question of the prevention of fragmentation of agricultural holdings and the formation of economic holdings in the Bombay Presidency. Copies of the report which he made to the Bombay Government and his draft Bill on the formation of economic holdings were obtained. In the report, Mr. Keatinge dealt in detail with the causes and the economic evils of the fragmentation of holdings and explained how in other countries similar causes had produced similar results and what remedial action was taken to meet the evil. His report and the Bill will doubtless be dealt with in detail by the Bombay Government. Copies of the report and the Bill were, however, circulated and opinions were taken how far the proposed legislation could be made applicable to the holdings in this Presidency. The Bill was only permissive in character. It provided for the formation of 'economic holdings' by the Collector and also for special rules of succession in regard to them. It was intended to give the ryots an opportunity of reforming their holdings in such a way that they would cease to be uneconomic. Neither the ryots nor the officials were in favour of the legislation. General opinion was also sceptical as to the efficacy of the Bill. In the face of the opinions expressed by the officials and the non-officials, the Board considered that the Bill recommended by Mr. Keatinge was open to the strongest objections, the more obvious of which were summarised as follows:—

(1) There would be the utmost difficulty in determining for the purpose of the Bill what constitutes an 'economic holding,' the value of land varying, as it does, according to the nature of the crops it can produce, the method of its cultivation, climate, the standard of comfort of the owner and so forth.

(2) The Bill aims at creating a vast mass of petty impartible holdings all over the country in defiance of the whole social system of Hindu and Mahommedans alike.

(3) Its operation would, as a rule, be confined to those families which are rich enough to compensate such members as are excluded from the economic holding, that is to say, to the very cases in which there is the least need for any special arrangements. In so far as the Bill could be applied to poor families it must tend to create a landless proletariat which is always a danger and doubly so in a country where industries are so little developed that they cannot absorb the surplus agricultural population.

(4) It would afford an opportunity to co-sharers to effect collusive registration thereunder for the purpose of defrauding creditors.

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(5) Its general effect, it may be surmised, would be to impair the credit of the agricultural classes.

(6) All transactions relating to land would be complicated by the question whether the condition of impartibility existed.

(7) It would involve the revenue establishment in troublesome and often infructuous inquiries on applications for creating economic holdings and on complaints that the rule of impartibility had been broken.

(8) It would undoubtedly prove a fertile source of strife in families.

Government were not prepared to undertake legislation even in a permissive form but they requested the Board to consider the possibility of carrying out an experiment for the rearrangement of holdings by consent in some typical villages in a district in which a special staff was engaged on *adangal* revision prior to a resettlement. The experiment was attempted in Trichinopoly, but it was found that the ryots were generally averse from any interference with their present law of inheritance giving each son an equal share of the family property and with the long established custom of partition, securing a mathematically accurate division of a holding amongst the heirs. Government considered that so long as sub-divisions had to go on for one reason or another in view of the traditions and practices of the holders of land, any attempt at consolidation of holdings was bound to fail and directed the experiment to be discontinued. It was decided that the real remedy for the evil rested with the people themselves and the solution of the problem apparently lay in educating them regarding the evils of fragmentation and the economic advantages of consolidation of holdings. With this view a pamphlet prepared by the Registrar of Co-operative Societies was published under the authority of the Publicity Bureau in the year 1920.

7. As things stand at present there is no limit set to the sub-divisions of fields except in three cases: (1) When a portion of a field is relinquished, it should not be less than 1 acre in wet and two acres in dry unless the relinquishment is made from causes beyond the ryot's control. (2) In transferring lands from wet to dry, the area to be transferred should not be less than 25 cents. (3) Sub-division for transfer from double crop to single crop or for compounding wet land for double crop charge is not permitted if the area is less than one acre.

8. The Punjab is perhaps the only Province in India where the problem of fragmentation of holdings has been seriously tackled. After much preliminary spade work some wonderful results have been produced there in the matter of consolidation of holdings by co-operative societies, and there is a striking contrast between the village maps before consolidation and after it. The experiment in the Punjab has thus proved that something can be done by the Co-operative Department in this matter. But whether the results will be permanent or not is a different question, as the forces of disintegration are at work and must, in the end, prevail. In any case, if the experiment is to be tried again in this Province, it is work that must be done by the Co-operative Department and not by the Revenue Department.

QUESTION 8 (*a*).—Before submitting my reply to the question I first refer briefly to what has been done and is being done in this Presidency towards the construction of irrigation works.

Government have as far as possible consistently with the resources of the State utilised the surface supply and have constructed several large irrigation systems and numerous smaller works where there was land suitable for irrigation. Some large projects have been sanctioned recently of which the Cauvery-Mettur Reservoir project and the Polavaram Island project in East Godavari district are the most important. The former will besides securing and improving the water-supply to the existing irrigated area of 1,038,000 acres bring under irrigation an area of 221,000 acres of first crop and 90,000 acres of second crop. It will also supplement the supply to an existing wet area of 80,000 acres now irrigated by inferior and unreliable sources of supply. The cost of the scheme is about Rs. 612 lakhs. The Polavaram

Island project is a very much smaller scheme costing Rs. 18·5 lakhs and the irrigable area is about 16,300 acres. Some important new schemes, *viz.*, the Upper Bhavani project (Coimbatore district) and the Bellary West Canal project (Bellary district) are under consideration. The former is a big project estimated to cost about Rs. 488 lakhs. It provides for the irrigation of 160,000 acres of first crop and 260,000 acres of second crop in the Coimbatore district in a tract which needs protection. The project is noteworthy for the reason that it marks the first important attempt in this Presidency to break new ground by designing a project for the irrigation of dry crops instead of the time-honoured swamp paddy crop cultivation. An experienced Settlement Officer has been placed on special duty to examine certain aspects of the scheme thoroughly. The Bellary West Canal project is estimated to cost about Rs. 90 lakhs and will bring under irrigation an area of 57,600 acres in the Bellary district. The district is in the famine zone and the tract which will be served by the project needs protection.

The following statement gives an idea of the extent to which the State has provided irrigation facilities in the Madras Presidency:—

Classification of works.	Total direct capital outlay to end of 1924-25.	Area irrigated 1924-25.	Value of crops. 1924-25.
	Rs.	Acres.	Rs.
Systems for which capital and revenue accounts are kept—			
Productive . . .	6,63,35,000	3,583,000	38,89,84,000
Unproductive . .	3,92,63,000	282,000	2,18,77,000
Systems for which capital and revenue accounts are not kept	35,70,000 (outlay in the year).	3,164,000	

The new schemes sanctioned or under consideration will, if the projects are all executed, increase the area under irrigation by more than 10 per cent.

Project.	Outlay.	Irrigable area.
	Rs.	Acres.
Cauvery-Mettur Reservoir . . .	6,12,00,000	221,000 plus * 90,000 „
Polavaram Island project . . .	18,55,000	16,300
Upper Bhavani project . . .	4,88,00,000	160,000 plus *260,000 „
Bellary West Canal project. . .	90,00,000	57,600 „ * 2,000 „
	12,08,55,000	806,900

* Second crop.

There is little or no scope for the construction of new anicut systems in the Presidency and resort must be had to expensive reservoir systems. The construction of works for the benefit of the Ceded Districts which suffer periodically from bad seasons is necessary, but the difficulty is that schemes which depend on the local rainfall are of no use as they would fail just when they are needed. A committee was recently appointed to examine the possibilities of new schemes for this tract. Its recommendations are under consideration

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A charge that is sometimes brought against Government is that they do not give adequate consideration to the proper maintenance, repair and restoration of the smaller systems for which capital and revenue accounts are not kept. This is far from being the case. The gross annual revenue from such works is about 90 lakhs and about a third of this is spent every year on the maintenance and restoration of the minor works. In recent years increased attention has been paid to these works.

In regard to the utilisation of the subsoil water-supply, the matter has largely been left to the initiative of the ryots. Government render liberal help by the grant of loans under the Land Improvement Loans Act for the construction of wells. The extent under well irrigation is very considerable in the Madras Presidency and forms about 20 per cent. of the total area on which irrigated crops are raised. The number of wells in use in 1924-25 was 606,217 and the gross area irrigated was 1,572,187 acres. Since 1914 Government have also undertaken a survey of underground water-supply in some districts. Bore holes were put down by the Department of Industries and their levels connected with mean sea-level and the underground water currents mapped. The mapping of subterranean water currents has been completed in the Chingleput, Tanjore, South Arcot and Kistna districts. Some work has been done in the Guntur and Nellore districts. The magnitude of the work is however very great as is evident from the fact that it would be necessary to have at least one bore hole for every square mile of area before accurate advice could be given regarding the course of underground water. The Government could not therefore inaugurate a systematic survey for the Presidency.

In districts like Anantapur, the ryots depend mainly on well irrigation. The Board of Revenue has suggested that the services of Major Pogson, the Water Diviner employed by the Bombay Government, might be utilised to locate sites for the sinking of wells in these famine affected districts.

(*b*) The practice in the Madras Presidency is to leave the actual field to field distribution of water in the hands of the ryots themselves. Government regulate supply only up to a certain point, *viz.*, the head of branch channels in the case of canal systems. It is left to the ryots to adopt any method they like for the irrigation of their lands and Government do not exercise any control on the way in which the water is actually used for irrigation or on the crops that are raised. The ryots follow certain recognised turns in the distribution and ordinarily there is no conscious waste of the supply. Judged however by modern scientific standards there is generally a great loss of water due to wasteful and unscientific application of water and there is room for improvement in the matter of getting the most out of the available supply without deterioration of the fertility of the soil. The Agricultural Department has been conducting experiments and carrying on propaganda work in the country but advancement by education of the general body of the ryots is a long process, and the question is whether any direct action can be taken by Government in the matter. Even to a casual observer the contrast which exists between the application of well water and of canal water is apparent. The difference must be due entirely to the fact that in the latter case there is no incentive to the cultivator to economise the supply, as he is assessed not by the amount of supply but by the area irrigated. The loss of water is not the only important consideration. Over-irrigation, it is believed, is slowly lowering the productive power of the land. The first stage of lower outturn has been reached in many parts although fortunately the second stage of alkalinity of soils resulting in the abandonment of land has not made itself manifest in the Presidency. The ultimate solution of the problem of using water to the best advantage will probably be found in the system of charge for water by volume.

The question of volumetric charge is an old one. The Irrigation Commission of 1901—1903 first suggested it. It was investigated in 1921 when a special officer was appointed to examine the possibility of substituting for the charge per acre some sort of quantitative charge. As it was impossible to measure the quantity flowing to each field, the system postulated the form-

ation of a bigger unit, say the lands under a single branch channel or sluice, and the sale of water in bulk to a co-operative body of the owners of the lands comprised in the unit. It was considered that the circumstances of the country were not yet such that the system could be adopted. It is doubtful whether the system will be introduced within the next two or three decades. For the present Government are confining themselves to the formation of irrigation panchayats for the management of the minor irrigation works or branch channels so as to create sufficient co-operative spirit.

No special steps are being taken here to prevent the wastage of water by evaporation or by absorption in the soil. I have suggested the adoption under the Upper Bhavani project of the "Kiari" system of the Punjab. Under this system every ryot must parcel out his holding into rectangular plots whose dimensions are dependent on the discharge from the pipe or sluice. The object is to reduce the time of irrigation to a minimum and so minimise loss by percolation, evaporation, etc.

QUESTION 26.—The work of arranging and publishing agricultural statistics is done by the Director of Agriculture and that officer will doubtless deal with this question at length. It may be generally observed that the present method of collecting the statistics in regard to the areas under cultivation and crops and estimating the yield of agricultural produce in this Presidency is good and sufficient for the purpose for which these statistics are collected. This was also the opinion of the Economic Enquiry Committee. The statistics of agricultural stock cannot be considered very accurate. This is due to the agency employed for the enumeration and the perfunctory manner in which the work is done and supervised. The accuracy of these statistics cannot be improved unless a large staff is employed the cost of which would not be commensurate with the results obtained. These statistics are now prepared for each quinquennium and they are accurate enough for purposes of comparison.

Oral Evidence.

11785. *The Chairman:* Mr. Macmichael, you are First Member of the Board of Revenue?—Yes.

11786. You have been good enough to prepare for the Royal Commission a note on some of the points as to which you wish to give evidence. Is there any statement of a general character which you would wish to make before I proceed to ask you one or two questions?—No; I do not think so, not just now.

11787. I should like at the outset to ask you a question of a somewhat general nature. Is it your view that substantial improvements in the practice of agriculture in this Presidency are possible?—Yes; speaking from my own personal experience I think there have been considerable improvements during the time I have been in this Presidency.

11788. And from that you would judge that further improvements may be possible?—That is my personal opinion.

11789. To what do you attribute such improvements as have taken place? —During the time of which I have personal knowledge I think they have been the result of the activities of the Agricultural Department chiefly.

11790. Any particular activities of the Agricultural Department?—I cannot go into very great detail in regard to it, but I may mention cotton; I am aware that considerable improvements have been made in cotton; and paddy also, I think, in some parts in the matter of more economical planting.

11791. Have those improvements resulted in a very considerable monetary advantage to the Presidency as a whole?—I could not answer that off-hand at all; my impression is that in the matter of cotton it has added considerably in some districts to the wealth of the ryots. I could not give you figures off-hand.

11792. And those improvements and that bettering of the ryot's financial position have, I suppose, been the direct result of the researches carried out by the Agricultural Department?—I think it is so.

11793. Now, from the ryot's point of view, does that in your mind justify such expenditure as has been directed towards research in the past?—It all depends on how much money Government have had to spend.

11794. From the Governmental point of view, does Government enjoy any share of the increment, the result of agricultural research and progress, in the shape of increased revenue?—I should say indirectly probably they do. Improved cotton crops make for better trade and that means more income-tax revenue for instance. They do not have any direct benefit.

11795. By 'direct' do you mean the land revenue?—That is what I understood you to say. Indirectly it must affect the Government; it improves trade and that is reflected in the income-tax.

11796. Now, in what respect would provincial funds benefit, if at all, from improvement in trade as the result of the agricultural advance?—I believe provincial funds get a small share of the income-tax revenue; I am not quite sure what it is, but I believe they get a small share. They benefit to that extent.

11797. What proportion of the Presidency is permanently settled?—Roughly a third. Speaking without the figures in front of me I think it is about a third.

11798. Now, assuming that the permanent nature of that settlement is respected, any increase in provincial revenue as the result of agricultural progress must obviously flow from the remaining two-thirds, and that is assuming that there will be some enhancement in the rate of revenue as the result of betterment when resettlement comes about?—Do you mean that only the two-thirds get the benefit of these agricultural improvements?

11799. No; I do not mean that; I will put my question in other words. As regards the two-thirds, do provincial funds sooner or later derive any advantage from the increased prosperity of the ryot?—They do to a small

extent, I believe through income-tax; I cannot think of any other form in which they do; also indirectly at resettlements.

11800. That was what I was waiting for?—The general economic condition of the district for the past 30 years comes up to be considered at the resettlement, when the Government decide whether the rates should be increased or not. It would come in indirectly in that way.

11801. Would you justify, from the angle of practical finance, the borrowing of funds to be spent on research and agricultural improvement on the ground that in due course the provincial revenue would benefit?—I do not think I know enough about finance to give an answer to that question; I have very little to do with finance.

11802. Now I turn to your note of evidence. I would like you to throw a little further light on the figures in the table on page 263. You are showing there a table which gives the increase in the amount of loans advanced year by year under the two statutes, the Land Improvement Loans Act and the Agriculturist' Loans Act. I notice that between *faslis* 1325 and 1332, there are no very special increases, but when you come to between *faslis* 1332 and 1333, there is an increase of form 7 to no less than 17 lakhs?—Yes.

11803. Can you explain that sudden rise?—Yes; very bad seasons up in the Ceded Districts in consequence of which there was a very great demand for loans in Bellary and in Anantapur. There was considerable distress in two districts especially, Bellary and Anantapur, and consequently the demands for these loans increased very greatly, especially for fodder.

11804. Is *fasli* 1334 the same as 1925?—1334 is from July 1924 to June 1925.

11805. And the same increase has taken place, I presume, for the same reason in regard to loans under the Agriculturists' Loans Act?—In that year there were very serious floods in the South of the Presidency in consequence of which large loans were granted.

11806. For what purposes would those loans in the main be taken?—Under the Land Improvements Loans Act, chiefly for digging and deepening wells.

11807. How would you account for this enormous increase as the direct result of failure of the monsoon and distress if money was to be spent on digging wells?—In a season of short rainfall the water level in the wells drops, and consequently they have to deepen wells in order to get water; and a good deal of it was spent in that way, and of course to some extent in digging new wells.

11808. And under the other Act?—Purchase of cattle and purchase of fodder for their cattle are probably the two main items.

11809. Was there a serious fodder famine in that year?—In Anantapur there was a very serious fodder famine.

11810. So that it looks from those two years as though it requires the stimulus of dire necessity to persuade the cultivator to make full use of the loans under these Acts?—I do not think I would put it that way; I think he is always quite ready to borrow provided we have the money to lend. It is because in those years there was much greater necessity for lending money that the grants were greatly increased.

11811. That increase is due rather to your readiness to lend than to the cultivators' increased anxiety to borrow?—Our anxiety to lend was due to the greater necessity of the cultivators in those years.

11812. You make the point of course that it would only be at the expense of the general tax-payer that you could relax the rules as regards Government lending and repayment?—That is so.

11813. As regards repayment the rules are not irksome; are they?—No; they have been relaxed from time to time as far as Government thought it safe.

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11814. What have you done to relax regular repayment?—That is the most irksome fact from the ryot's point of view, having to repay at definite dates.

11815. In a country where the cultivation is so much dependent upon the seasons, and where the rainfall is particularly apt to fail, it may be a very difficult matter for the cultivator to repay?—The district officers have considerable discretion in the matter of granting time to pay in the event of a bad season or for causes beyond the man's control.

11816. When the cultivator goes to the moneylender he may be paying higher interest; but I take it the same punctuality in payment is not insisted upon?—That is my impression.

11817. Do you think that is one of the principal reasons why the cultivator as a rule prefers the moneylender?—I do not think I would go so far as to say that he prefers the moneylender; he cannot always get loans from Government; that is doubtless one reason why he is prepared to pay a much higher rate of interest to the moneylender.

11818. You have not noticed a preference on the part of the ryots for borrowing from the moneylender as against borrowing from Government?—No; I have not.

11819. In the case of a cultivator seeking a small loan under either of these Acts, do you know whether the cultivator actually gets into his hands the whole sum borrowed, or whether there are certain charges of incidental expenses which reduce the total amount that gets into his hands?—It is generally believed that there are such charges and incidental expenses; the general impression is that the whole amount does not reach him.

11820. Do you think that is another reason for the comparative unpopularity of loans under these Acts?—I do not think they are unpopular.

11821. Do you think that full use has been made of these Acts by the cultivators?—I think as full use as is desirable has been made. My own view is that they should be chiefly used in years when there is some exceptional calamity or distress.

11822. The Commission has been unable to obtain, so far, any accurate statement of the long-term debt of cultivators in this Presidency, whether secured or unsecured; can you give us those figures?—The total debt? No, I could not.

11823. Would you agree with me that it is only by comparing the total indebtedness to Government of cultivators under these Acts with the total aggregate indebtedness including debts to moneylenders, co-operative societies and the like, that a true picture of the part which *taccavi* loans are playing can be arrived at? You do not know what proportion of the total debt is due to Government?—I do not.

11824. Do you think it might be helpful to discover that?—I think it would be very difficult to discover it.

11825. Do you know whether a survey of that sort has been made in other Presidencies or Provinces?—That I do not know.

11826. The Commission has read through your memorandum with great interest. What I should like to do, if I am able to achieve it, is to get from you any positive or constructive suggestions that may be in your mind for the betterment of the agriculturists?—If we could instil the spirit of thrift into them, I think that would go to the root of the matter.

11827. Is that likely to come by any agency other than by education?—I should say the co-operative movement was the most likely.

11828. Have you any personal knowledge of the co-operative movement?—Only in a very general way; I have never had anything particular to do with the department.

11829. Have you formed any view as to its soundness or the reverse?—Do you mean of the co-operative principle in general?

11830. No, of its application in this Presidency?—I do not know enough about the details to give an opinion on that. It seems to me that it is chiefly through the development of the principles of co-operation that the ryot in this country is likely to learn to be less unthrifty than he is.

11831. I should like to ask you a question on your answer to question 7 about Fragmentation. You are talking about the successful endeavours that have been made in the Punjab to achieve consolidation of fragmented holdings by voluntary means. Would that complicate matters for the revenue establishment, if you could achieve it in this Presidency, or would it simplify them?—It would simplify our accounts very considerably.

11832. So that your remarks on page 266, that consolidation under the Act drafted by Mr. Keatinge would involve the Revenue Department in troublesome and often infructuous enquiries on applications for creating economic holdings and on complaints that the rule of impartibility had been broken, would not apply in the case of voluntary consolidation, according to the Punjab scheme?—What I mean when I say that it would simplify our accounts if the Punjab scheme were carried out, is that our revenue accounts would be simpler than at present; instead of having 1,000 entries for a village, we should perhaps have less than 100 entries.

11833. I understand you are satisfied that, under the Bill drafted by Mr. Keatinge, which Bill you comment on, on pages 265 and 266, that would not be the case, and the revenue establishment might be involved in what you call troublesome and infructuous enquiries?—Yes, that is my opinion of that Bill, that it would not have the desired effect, so far as Madras is concerned; or at least I am very doubtful whether it would.

11834. I do not quite understand why it should involve the revenue establishment in these troublesome enquiries?—So far as my recollection goes, according to the Bill, the question whether a holding was an economic holding was left to be enquired into by the revenue officials; I am speaking from memory, of course; it is some time since I saw that Bill.

11835. The principle of inheritance by sub-division, I take it, must go on. Is that your view?—Yes; it would be a very big question to try and alter the law of inheritance out here.

11836. But it is possible to minimise the harmful effects of sub-division by taking all possible measures to see that such sub-division is effected without undue fragmentation; is that the position?—I am not quite sure that I caught your question correctly.

11837. I was wondering whether you differentiate, in your own mind, between sub-division and fragmentation?—Yes; I understand fragmentation would be the case of a man having his holding scattered all over the village in small lots.

11838. In small lots?—Yes, instead of one compact lot.

11839. Take any one unit. If you must have sub-division you may under the best conditions divide that unit into two parts, each a homogeneous whole. On the other hand it too often happens that that unit is divided into, let us say, four or eight allotments, although in fact it is only being sub-divided amongst two heirs?—Yes, that is true.

11840. May I ask you a question on your answer to our question 8, on Irrigation. You divide these schemes under the two headings, productive and unproductive. In the case of productive schemes, I take it that the charges for the water meet the interest and amortisation on the capital involved in making the scheme. Is that the position?—Yes, that is the idea.

11841. Please turn to page 267. I want to get from you which, if any, of the new projects, the Cauvery-Mettur Reservoir project, the Polavaram Island project, the Upper Bhavani project, and the Bellary West Canal project, come under the heading of productive?—The Cauvery-Mettur project is productive. All these schemes, as at present drawn up, are on a pro-

ductive basis. The Upper Bhavani and the Bellary West Canal projects have not yet been sanctioned; they are under investigation.

11842. I noticed that, and I see an experienced Settlement Officer has been placed on special duty, according to your note, to examine certain aspects of the scheme thoroughly?—Yes; that is the Upper Bhavani project.

11843. Who sent out the instructions which that officer has received?—They are mostly from myself to him.

11844. Would you put in a note on the point?—It would be easier for me to put in a note, because I should have to discuss it in detail; I think it would save you time if I put in a note.

11845. Broadly speaking, is your intention in making this examination to discover whether this Cauvery-Mettur and other schemes are sound financially?—That is part of the idea; as regards the Upper Bhavani project, there is also the question how far we require special legislation, in the way of an irrigation law, before it would be safe to embark on it; at present, we have practically no irrigation law in this Presidency.

11846. You are considering the introduction of an irrigation law?—It has been under consideration for 30 or 40 years; it has certainly been under consideration all the time I have been in this Presidency, and I think it was under consideration for some time before.

11847. That is a very considerable period for contemplation even in this part of the world; is it not?—Yes, it is. The Irrigation Bill has actually been passed through the Council, but it has not yet received assent; the consideration of certain amendments proposed by His Excellency the Governor is to be taken up in the next session of the Council.

11848. Will that particular statute cover the ground that you have referred to?—As regards this scheme, I think it would be simpler to have a special short Act for this particular purpose. There would be less likelihood of opposition to it.

11849. What is the prime purpose of a special Act of that sort?—Principally to give Government power as regards the regulation of the distribution of the supply.

11850. Not the charges?—The charges would possibly come under it. The charges certainly come under the Irrigation Bill which is at present under consideration, but the particular object for which I suggested a special Act in the case of this scheme was to give Government full powers of regulation.

11851. *Sir Henry Lawrence:* Is it the regulation of the distribution of water?—There is a considerable area under this project which is at present served by wells, and we would have to have some special rules in regard to the liability of these people.

11852. Liability to pay money?—To pay water rate. If we had not such rules, they would probably take up the position that they had not taken water, although obviously they had; they are quite willing to take the water.

11853. The main purpose of your Act is to safeguard the finance of the canal?—Yes.

11854. *The Chairman:* Are there one or more hydro-electric schemes associated with this group of four projects?—None so far as I am aware. I know very little about these hydro-electric schemes; I have nothing to do with them. There is a hydro-electric scheme under consideration at Pykara up in the Nilgiri hills, but there is none so far as I am aware connected with any of these.

11855. Not with the Upper Bhavani project?—No. I should explain that the first two, the Cauvery-Mettur reservoir and the Polavaram project, are under execution now.

11856. So that these are more than projects; they are accepted schemes?—Yes.

11857. I see. As regards these other two, if further investigation shows that they are financially sound, is there any difficulty in starting them?—No special difficulty that I am aware of. It is a question of sufficient staff and funds.

11858. First as regards funds, is there any difficulty in borrowing funds for projects of that nature?—So far as the financial side is concerned my duty is to report whether the project will be productive or not, what rates it is necessary to impose in order to make it productive and whether the ryots are likely to be willing to pay such rates. But in the matter of borrowing, I have nothing to do with that.

11859. But as far as you know, provided your investigation shows that the schemes would be water-tight financially, there is nothing to prevent their being undertaken forthwith?—No.

11860. Is the Cauvery reservoir scheme the only scheme that is at the present moment being developed?—That is the largest one that is under execution.

11861. Now as regards the unproductive schemes, what is the primary purpose of an unproductive scheme?—To protect from famine.

11862. Famine insurance? It is insurance against famines?—Yes.

11863. From the point of view of your own department what are the circumstances which justify the launching or putting into execution of an unproductive scheme?—From my point of view as Famine Commissioner, I am always in favour of that. It is all a question of sufficient funds, whether Government can afford to pay the cost, if the return is not going to cover the interest charges. Naturally as Famine Commissioner I consider that the more of these we have, the less likelihood there is of famine.

11864. Now these schemes are called unproductive; but is the loss in fact the difference between what the scheme returns in revenue and the charges? Is there no element of insurance coming in by which the Presidency is spared important expenditure in other directions?—There is; but it is very difficult to estimate that in definite figures. There is undoubtedly that element.

11865. Can you give us any idea of how substantial a consideration that is in your own mind?—It depends upon the particular district and the amount of liability incurred by the Government by taking up the particular work. I do not think I can generalise on that point.

11866. I see you make one constructive suggestion. Half-way down page 268 you suggest or the Board of Revenue suggests that the 'services of Major Pogson, the Water Diviner employed by the Bombay Government, might be utilised to locate sites for the sinking of wells in these famine affected districts.' Has the Presidency any local talent in that direction?—I am not aware that there is such local talent. I believe the Bombay Government have employed Major Pogson for one or two years, so I presume that they were getting some value for their money.

11867. What do you regard as the most typical dry cultivation tract in this Presidency?—Any dry cultivation without wells?

11868. Without wells?—Typical of what?

11869. Dry cultivation. I was going to ask you, perhaps the next question might help you, whether you had any experience of these dry cultivation areas which would enable you to give us any information as to the comparative use which cultivators of such areas make of Government loans as compared with the use made of the same by cultivators of irrigated or well-irrigated areas. Are you familiar with any dry cultivation area?—I was in the earlier years of my service familiar with parts of the Anantapur district which is mostly a dry district.

11870. So that on the point upon which I am interested you cannot give us any information?—I am not sure I have caught the point properly, was

it the comparative use that they make of Government loans in dry areas and in irrigated areas?

11871. Yes?—They do make far more use of the Government loans in dry districts like Anantapur for sinking and deepening wells than they do in the ordinary wet districts where the supply of water is practically assured.

11872. Are any improvements possible in a dry tract which would justify long term loans?—What the ryot in a dry tract like Anantapur wants is to be sure of finding water when he digs his well. That is the outstanding question for him.

11873. On your answer to our question about Statistics I would like to ask you whether you think that the statistics of inter-provincial rail-borne trade which are to be revived can be improved upon in any way? They were discontinued, I think, about 1922. Do you know the statistics to which I refer? —I think I do; but I had very little to do with any of these inter-provincial statistics.

11874. Have you ever heard of a suggestion to remit revenue on land used by the cultivators to grow fodder crops with a view to encouraging the growth of these crops and so improving the cattle in the Presidency?—We are giving concessions to them at present in the matter of water charges for growing fodder crops and green manure crops. If water is available we allow them to have it without charge.

11875. *Sir Henry Lawrence:* In regard to your irrigation we had some evidence to show that there is not very much contact between the Irrigation and the Agricultural Departments. Do you think that that is the case?—Does that mean the Public Works Department, for there is a branch of the Irrigation Department on the revenue side and I have got to do with the revenue side?

11876. You collect the revenue and the Public Works Department are to give the water?—That is the position, roughly.

11877. I take it this complaint, as I understood it, referred to the distribution of water?—Yes, in the larger systems for which the Public Works Department are responsible; a good many smaller systems are under the Revenue Department, the District Officers.

11878. And who is the superior officer in charge of the Public Works Irrigation portfolio?—The Head of the department is the Chief Engineer.

11879. What Member or Minister is in charge of Irrigation?—The Law Member, Sir C. P. Ramaswami Ayyar, is in charge of Irrigation.

11880. He is a Member of Council?—Yes.

11881. And Agriculture is in whose portfolio?—That is under a Minister, Sir T. N. Sivagnanam Pillai.

11882. A suggestion was made in other parts that Irrigation and Agriculture should be under the same superior control. That, I suppose, is not possible if one is Transferred and the other Reserved?—That is the difficulty here.

11883. You have reserved your irrigation?—Yes.

11884. Apart from accepting this suggestion that they should both be under the same head, is there any other method by which greater co-operation can be maintained between the officers of the one department and the officers of the other department?—Until a few years ago agriculture was under the Board of Revenue and under the Settlement Commissioner; that possibly afforded a greater amount of co-operation, or rather co-ordination, than there is at present. On the other hand, of course, it is probably undesirable to revert to that arrangement; at least there will probably be serious objection.

11885. Has this lack of co-operation been brought to the notice of the Government at all?—The point was not raised by me so far as I know, or by the Board of Revenue.

Mr. N. Macmichael.

11886. Has it been brought before the Board of Revenue?—Not to my knowledge. I am not aware that it has been.

11887. Questions in which there has been any friction between the irrigation officers and the agricultural officers have not come to the notice of the Board of Revenue?—I can only recollect one case where there was a question of supplying irrigation to some experimental plots in a district when the supply was very low, some two years ago after the floods in Tanjore. The question was as to whether these experimental plots or the needs of the ryots should have the first preference.

11888. To whom did you give the preference?—The ryots.

11889. A smaller issue rather than the greater?—Well, it was the only way of saving the ryot's crops and the experiments could be carried on in the following year, I suppose.

11890. If there was friction between these departments would they come to the Board of Revenue to settle it?—Yes.

11891. You do not think there has been any serious trouble between the two?—I do not think so.

11892. You mentioned just now that you thought instruction in the art of thrift is the greatest need of the hour?—I am not sure I put it that way. What I meant to suggest was that it was very essential for the ryot to imbibe the spirit of thrift. I am not sure how he will get the instruction, or to what extent he will imbibe it.

11893. I thought there should be some manner of leading to the result and that that should be achieved through the co-operative movement?—I think the co-operative movement is the most likely way to bring it about.

11894. You consider that amongst the ryots in this Presidency there is real ambition and desire to work. Do they wish to improve their standard of life?—It is rather difficult to give a general answer to that question. I mean some of them do and some of them do not.

11895. Do you see a general desire for improvement?—Yes, but a considerable number of them in my experience are quite satisfied with things as they are.

11896. You have a larger emigration from this Province than any other Province I believe?—It is considerable; I could not say how far it compares with other Provinces, but there is a considerable amount of emigration from this Presidency.

11897. Those men who emigrate do so to improve their position in life?—In many districts they emigrate in the slack season. In Ganjam they do it at the end of the harvest; they cross to Burma for work there. There is a regular return at the beginning of the cultivation season.

11898. Is that on a sufficiently large scale to be of material assistance to the economic condition of the ryot?—In that district it is.

11899. Is that one district? Which district?—Ganjam.

11900. Is that a dry district or a wet district?—Partly dry, there are some irrigation works there; it is about half and half, wet and dry.

11901. Your dry districts are Bellary and Anantapur?—These are typical dry districts.

11902. Is there much seasonal emigration from these dry districts?—Not on a very large scale. There is a certain amount to surrounding wet areas for harvesting, chiefly to British areas.

11903. Do they go to the wet area?—Sometimes.

11904. Do they go to Hyderabad and Bombay districts?—I am not aware of any large emigration there. But I know they go to some of the surrounding districts.

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11905. For the more regular work?—Yes, chiefly for the harvest.

11906. In these wet areas, is there work all the year round? 12 months' work for the ryot and his labourer?—I doubt whether there is; there is most work at the time of transplantation of paddy and at the harvest.

11907. Are two crops grown?—In some districts under some irrigation works they are; under others there is only one.

11908. To what extent has this wet cultivation been the result of the irrigation projects introduced by the Government?—It seems to me to a very large extent. In the deltas it has been due almost entirely to Sir H. Cotton's work, for instance the anicuts across the Kistna and the Godavari.

11909. You have got ten per cent of the total area protected by canal irrigation?—I am not prepared to say the exact figure; I am not quite certain.

11910. You have 38 lakhs of acres of cultivation under irrigation; that is your own figure?—Yes, that is the area under systems for which capital and revenue accounts are kept.

11911. Of that 38 lakhs under irrigation, what proportion is the result of major irrigation works undertaken by Government?—The whole of that, I think.

11912. As distinguished from old works which existed?—I could not tell you that. My impression is they are mostly works which have been constructed by Government. There are some exceptions like the Tanjore Grand Anicut which has come down from about 300 years ago.

11913. You could not give any figures? Could you find out and let us have the figures?—Yes, I will try and find out all the works constructed by Government as distinguished from those that have come down.*

11914. *Mr. Calvert:* The average area of land under the various works, I think, you have given in the total?—I do not think it distinguishes works constructed by Government from the older works.

11915. *Sir Henry Lawrence:* I understand from your note that irrigation wells irrigate 16 lakhs of acres and you have certain surveys being carried on with a view to increasing the number of wells. I cannot understand from your note what conclusion has been arrived at from this. Has any conclusion been arrived at?—Is that a survey of underground water?

11916. Yes, precisely?—That was done by the Director of Industries in the Department of Industries. I have no personal knowledge of it except from what I have seen from the Government Order on the subject. I think the conclusion was that it was too expensive.

11917. Too expensive to do what?—To continue the survey.

11918. Has the survey been completed in certain districts? What I want to know is about the practical application?—I do not know anything about it. It was all done by the Department of Industries.

11919. Would they not report to the Board of Revenue?—They report to the Government in the Development Department.

11920. Then, whose business will it be to see that some final decision is made as to whether wells can be increased and to pass orders on this survey? —I have got the order of Government here. What Government said was they propose to publish results of the underground survey in the form of maps showing contours of subsoil water. These maps will prove of some assistance to tracts in which subterranean water has been found. That is the whole acion that has been taken.

11921. Then the decision as to whether anything further should be done will rest on the Government. The Board of Revenue are not interested?—

* Figures furnished later. Out of 38 lakhs of acres irrigated under systems for which capital and revenue accounts are kept, 16 lakhs represent the extent of old irrigation.

No, it is not the business of the Board of Revenue, to go ahead with digging wells for the ryots.

11922. I am asking for information; I am not imputing any responsibility or blame. You have irrigation under you, have you not?—Yes.

11923. Irrigation from canals?—I have got it from the revenue point of view, not from the professional or irrigation point of view.

11924. As regards suggestions for improvements, do they come from you or any other authority?—They might; suggestions for work would come from ryots and Collectors of districts.

11925. And suggestions in regard to improvement of wells? Where do they come from?—I certainly should make them to Government if I had any.

11926. They would be within your province?—Yes.

11927. The survey which has been made and which may lead to such a policy, that survey is not reported to you?—A copy of the order was communicated to me. But the survey was made under the control of the Director of Industries and reported direct to Government.

11928. Then to carry on in that connection you, the Board of Revenue, had suggested that the Water Diviner employed by the Bombay Government should be borrowed from them?—He wrote offering his services; but I understand that he is still employed by the Government of Bombay.

11929. Have the Government of Madras ever employed a Water Diviner?—Not to my knowledge.

11930. Was there a Water Diviner here 40 years ago?—That was before my time.

11931. The results of his work are not well known in this Presidency?—I am not aware of them.

11932. *Sir Ganga Ram:* One-third of area is permanently settled?—Yes, approximately.

11933. If Government convert any dry areas into wet areas, will the terms of permanent settlement preclude you from charging any water advantage rate?—If Government supply water to dry lands, in a permanently settled estate they are entitled to charge water rate.

11934. Not water rate; I mean water advantages in terms of revenue. Water rate of course they will have to pay for the use of the water; but would the terms of permanent settlement preclude them from charging any increased water rate owing to the advantages of water?—In this Presidency, we combine in what we call our water rate what you call water rate and water advantage rate; we have got a consolidated rate.

11935. There are two kinds of rates, water rate and land revenue for the use of the land. At a resettlement you raise the rates according to the condition of the land. In those tracts where the settlement is not permanent, of course you would enhance the revenue; would you not?—Exactly.

11936. Supposing those tracts were dry tracts at the time of a previous settlement, and you convert them into wet tracts, are you entitled to enhance the land revenue at a resettlement?—Yes, in ryotwari tracts.

11937. Would the terms of the permanent settlement preclude your doing that?—Yes, in permanently settled estates.

11938. *Sir Henry Lawrence:* You make no provision to take such a rate in your new Irrigation Bill apart from water rate?—No; we do not. We combine the two rates they have in the Punjab. The only charge besides the land assessment that we levy is the water rate.

11939. *Sir Ganga Ram:* May I make my question still clearer? Where land is not permanently settled, naturally when the canal comes in, you would enhance the land revenue, would you not?—Not necessarily.

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11940. Is not your settlement periodical?—Yes, once in 30 years.

11941. After 30 years, naturally you revise the rates taking into consideration the condition of the land. The condition of the land improves owing to the canal coming in. Would the terms of permanent settlement preclude your getting any advantage on behalf of Government?—You mean in ryotwari tracts?

11942. No; in tracts which are permanently settled?—We could not touch what we call the *peish-cush*, that is, the permanent assessment the zamindar pays; any increase would have to take the form of water rate.

11943. That is to say the acreage rate in permanently settled places will be more than in periodically settled areas?—Not necessarily.

11944. You are doing it, I know. I have got figures to show that. While you are charging Rs. 5 per acre in ordinary land you are charging more in zamindari areas?—It is quite the other way round. In the Kistna and Godavari deltas is zamindari tracts we charge Rs. 5, and in Government ryotwari tracts we charge up to Rs. 8 or Rs. 9.

11945. *Sir Henry Lawrence:* You know that in Bombay where water has been brought into a dry tract, the price of land has gone up sometimes tenfold and twenty-fold. It is proposed there to have some legislation to enable the general tax-payer to get back some of the unearned increment. Have you any proposal of that kind in your new Irrigation Bill?—There is a proposal in the Bill to increase the rate when we have got the consent of the holders of two-thirds of the tract within the benefited area to the increased rates.

11946. Increased water rate or land revenue rate?—Water rate.

11947. You levy no rate on account of the improvement in the value of the land per acre which occurs when water is given?—We do not levy any special rate; we consolidate it in the water rate; when fixing the water rate we take into consideration partly the additional value.

11948. Nothing is taken from the people whose land is being improved by reason of water being brought there, apart from the people who actually take the water?—Well, it is the people who take the water who get the unearned increment.

11949. This is the question. Either you attach the rate to the actual use of water, or you attach the rate to the land; in the latter case the rate will be paid whether the opportunity is taken advantage of or not?—So far as we are concerned, we always attach it to the use of the water.

11950. *Sir Ganga Ram:* I suppose your acreage rate is a fluctuating rate measured on the area actually matured?—What do you mean by actually matured?

11951. On the crop actually matured?—We levy a charge on the area cultivated.

11952. It comes to the same thing; you do not levy if cultivation does not mature?—Sometimes we do.

11953. In that case, do you control the quantity of water that a zamindar takes; that is to say, do you specify that for a gross area of say 1,000 acres he must take only so much water, or do you give him the opportunity of using as much water as he likes?—I think the Chief Engineer for Irrigation will be in a better position to answer that. I do not think as a matter of fact we do control them at all.

11954. You say the hydro-electric scheme has not yet been thought of?—I said there is one under consideration.

11955. Which one?—The Pykara one.

11956. How much power is it expected to develop; do you know?—I have no details.

11957. The Irrigation Commission made certain recommendations for the improvement of irrigation; do you know that?—Yes.

Mr. N. Macmichael.

11958. Have they been carried out?—Some of them.

All of them have not been carried out. Could you get a statement prepared showing which have been carried out and which not?

The Chairman: It will be better to ask the irrigation officer.

11959. *Sir Ganga Ram:* On the first page of your note you give figures of loans advanced for the last ten years; how much of that has still to be recovered and how much has been recovered?—I could not tell you off-hand. I can get you the figures.

11960. Supposing you convert dry land into wet land, can you tell us approximately how much enhancement you would get per acre?—It depends very much on the land and the irrigation.

11961. My object is to find out where by converting dry land into wet land, you could get sufficient land revenue which, *plus* the water rate, will make a scheme productive and not merely protective?—Well, in the Mettur scheme, which has just been started, we are proposing a water rate of Rs. 15 an acre for the first crop, paddy crop.

11962. Rs. 15 an acre?—Rs. 15 per acre for the first crop and Rs. 10 for the second crop.

11963. Have the people agreed?—We expect them to pay these rates.

11964. Is that enhancement for land revenue and water rate, or only for water rate?—That is the water rate.

11965. When the resettlement comes, will you enhance the land revenue? —The land revenue on ryotwari areas is liable to enhancement.

11966. Could you not give me any rough idea as to the amount by which you enhance the rate at the resettlement, owing to the conversion of dry into wet land?—You wish to know how much it comes to actually in rupees?

11967. Yes?—Something from Rs. 2 to Rs. 3; it may vary from Rs. 2 to Rs. 3, and it may probably go up to Rs. 10 or Rs. 12.

11968. I mean enhancement of land revenue?—The difference between the assessment when the land is dry and the assessment when the land is wet.

11969. *Sir Henry Lawrence:* Is that in addition to the water rate?—No. That is the amount by which in some cases the consolidated assessment will be increased; that is the difference between the assessment of dry land and the assessment of wet land.

11970. Would the ryot have to pay Rs. 5 as water rate and Rs. 10 as land revenue?—No.

11971. *Sir Ganga Ram:* That is what I wanted to know. The land revenue rate would not be more?—Rs. 2 to Rs. 3 on dry land.

11972. Apart from the water rate the land revenue would go up by Rs. 2 or Rs. 2-8-0 per acre at a resettlement?—At a resettlement the maximum increase we can put under land revenue is three annas per rupee.

11973. That is the ordinary enhancement; not when it is converted from dry to wet?—We would not raise the consolidated assessment more than three annas in the rupee.

11974. *Sir Henry Lawrence:* What would be the average dry crop assessment of land to which the water rate would be added?—You mean the fifteen rupees?

11975. Yes?—Probably between Re. 1 and Rs. 2.

11976. So that it might go up from Rs. 1-8-0 to Rs. 1-14-0?—Yes, at a resettlement.

11977. *Sir Ganga Ram:* Only 5 or 6 annas?—Three annas in the rupee is our maximum.

11978. And your average settlement rate is Rs. 1-10-0?—It varies.

11979. That is, it may amount to Rs. 2?—Yes.

11980. If land is converted from dry to wet you will get at least Rs. 5 in water rate and 5 or 6 annas in land revenue. With this you can make many schemes productive instead of protective?—I hope so.

11981. *Sir Thomas Middleton:* Do the ryots' forests come under the Board of Revenue?—Yes, the Forest Panchayats are under the Board of Revenue.

11982. Can you give us any indication as to the rate of progress in the last few years?—That is not under my charge; it is under the charge of the Land Revenue Commissioner. I am in charge of Settlement.

11983. But we could obtain the figures showing the rate of progress?—Certainly.

11984. With reference to your note on Statistics, could you indicate whether the statistics that we get from the Madras Presidency are equally reliable from the zamindari and the ryotwari tracts?—They are much more reliable from the ryotwari tracts.

11985. In discussing thrift, I think I heard you use the term "reviving the spirit of thrift." What I wanted to ask you was whether there was any suggestion that the population was growing less thrifty?—I did not intend to use those words, if I did use them.

11986. You know it is a very common suggestion in all parts of the world now that the population is growing less thrifty; I wondered whether it had reached Madras?—That was not at the back of my mind.

11987. Can you discover any relation between the thrift of the population of areas under dry cultivation and that of the population of areas under wet cultivation, that is to say, are the populations of the irrigated tract usually more thrifty or less thrifty than those in the dry tracts? It has not been noted?—I have not noticed it myself.

11988. There is no suggestion that in those famine tracts which you mention the population is less thrifty than in the regularly settled rice-growing tracts?—No.

11989. With reference to the effects of improvements of agriculture upon your revenue, you have explained to us that, so far as land revenue is concerned, it can only become effective, at the new settlement, and then is subject to certain rules. But is it not the case that the prosperity of the agricultural population must have a very large effect on your revenue under Excise and your revenue under Stamp duties?—Undoubtedly, yes.

11990. These two of course fluctuate with the prosperity or adversity of the population, generally?—Yes, I agree.

11991. So that, quite a short period after a notable agricultural improvement has been made, the tax-payer may derive considerable advantage through the Excise or through the Stamp duty, without having to wait for his 30 years' resettlement?—The converse is certainly the case; in a bad season Excise receipts generally drop.

11992. You have told us that the ryot is a willing borrower; can you describe the Government as a willing lender, or as a willing lender when there is need?—I think so.

11993. Which?—A willing lender when there is need.

11994. That is indicated by your figures; there has been a rapid increase. I was going to ask you, what actually was the process by which these figures doubled in the two years of famine? Was there an announcement by the Government that loans would be much more freely available, or did there come in from the districts an insistent demand for *taccavi*?—The Collectors represented that they had a large number of applications and required more money to deal with them.

11995. It was the insistence of the borrower that was the reason for the large increase?—Yes.

11996. *Professor Gangulee:* You do not make it known to the average cultivator that such loans would be available?—Yes; we do.

11997. In times of scarcity?—In times of scarcity, undoubtedly; all the district officers undoubtedly make it known.

11998. *Sir Thomas Middleton:* As the amount of money for *taccavi* advances is strictly limited, you have of course definite rules under which *taccavi* advances are granted. To what extent does the officer who actually authorises the advances, the Collector, I assume, regularly use his personal knowledge of the circumstances in discriminating between one advance and another? Is it largely a question of rule, or is it a question of the personal knowledge of the Collector that determines the advance?—If there is money, and if the Collector has a sufficient allotment, and if the security that the borrower offers is sufficient, he would give the loan when it is asked for, provided it is found that the loan is necessary for the purpose for which the borrower says he wishes it.

11999. That means, in practice, advances would be given in order of application to reputable borrowers who can produce sufficient security?—Yes.

12000. Are *taccavi* advances as readily granted in the zamindari tracts as in the ryotwari tract?—Not to the same extent; we do grant them to the zamindari tenants if they have an occupancy right in their land.

12001. But if there were two villages next door to each other, and one was a zamindari and the other a ryotwari, would the Collector, in practice, endeavour to satisfy the ryotwari village before he accepted any applications from the zamindari village? Is there any discrimination?—There is no discrimination, according to the rules.

12002. The difference arises from the condition of the borrower, not from the attitude of the lender?—It is all a matter of the security.

12003. *Dr. Hyder:* How long have you been in this Presidency?—32 years.

12004. You have served as a district officer?—Yes, for the greater part.

12005. In different districts?—Yes.

12006. Even if those cultivators became models of thrift, do you think they would have a large surplus out of which they could save? Given the will to save on their side, do you think they possess the power to put by money against bad years?—I think that if the spirit of thrift became a good deal commoner among them it would probably be followed by various other improvements which would enable them to save money in good years; they would probably not marry so early in life, and their families would not be as large as they are; that would probably be followed by other improvements in their condition, which would enable them to save in good years for the bad years.

12007. *Mr. Kamat:* In good years, the cultivator has a surplus?—That is my belief.

12008. *Dr. Hyder:* That would apply to these delta or rich areas; would it apply to the Ceded Districts, Bellary, Anantapur, Kurnool and Cuddapah? Do you think the cultivator has got enough surplus out of which he could save?—In a good year he could have a surplus, but the trouble is that good years are so rare, up there; that is the trouble about Bellary and Anantapur.

12009. With regard to the question of fragmentation, in criticising the scheme of Mr. Keatinge of Bombay you say that the standard of comfort of the owner varies. I can understand that the standard of comfort would vary, if the people were rich, among different classes. Would it vary very much in the case of the people we have specially in view, that is to say, people whose holdings are not big enough to support them and their families from year to year, the class of people who are not high in the social scale, the ordinary cultivators? Does this standard vary much among the different districts of the Presidency?—I should not like to answer that off-hand; it is very difficult to say.

12010. I was wondering whether there was much in the objection urged by the Government of Madras or the Board of Revenue, whether there was a

great variation in the standard of comfort of the ordinary run of cultivators?—You are talking of people with holdings who have subsidiary occupations?

12011. Yes?—It would depend on how far they depended on cultivation and on how far they depended on a subsidiary occupation; would it not?

12012. That, of course, would mean that the variation would be less, if they had more land?—Yes, I think so.

12013. There must come a point which determines this question, whether the cultivator can support a family out of the proceeds of a given area, taking all the other circumstances, fertility, irrigation, rainfall, etc., into consideration?—You want to know if there was a wide variation in the standard of comfort of this class of people from one district to another?

12014. Yes?—I do not know.

12015. I understand that the Cauvery-Mettur project is going to improve and secure the water-supply of the existing irrigated area of about a million acres. Here you have got the consolidated wet assessment, have you not?—Yes.

12016. It is going to bring under cultivation an additional area amounting to 221,000 acres of second crop. Can you tell me whether you are going to have a consolidated wet assessment on this additional area as well?—No, we propose to charge water rates; we do not propose to consolidate the water rate with the dry assessment.

12017. What relation is there going to be between the charge on the present area and on the consolidated area? Are you going to equalise, or level up?—We cannot do anything with the existing area; it already has this consolidated wet rate which is not liable to alteration for the next 30 years, until the next resettlement.

12018. You say that the actual field to field distribution of water is in the hands of the cultivators themselves. Is that the practice?—Yes.

12019. You say later on, as a reason against the introduction of the system of distribution of water on a volumetric basis, that it would be impossible to measure the quantity flowing into each field. If the field to field distribution is in the hands of the people themselves, you are in a much better position to introduce the volumetric system in your Presidency?—If they would agree to it; you would have to get agreement between themselves, that they were willing to be served by any particular meter.

12020. But at present, all you do is to deliver a certain quantity of water, and you leave the actual field to field distribution to the people themselves; they manage it amongst themselves?—Yes.

12021. If you had this volumetric system, a module or some other kind of measuring device, your part of the business would be very small; the rest of the distribution, being in the hands of the people themselves, would be very easy?—You would not then be charging the individuals by the meter reading; you distribute the meter reading amongst the individuals according to their acreage, which is not the volumetric system.

12022. Are those panchayats, the Irrigation Panchayats which you have introduced in the Presidency, proving successful?—Several of them have been quite successful so far. Only they have not been working long. It is premature, I think, to express any definite opinion as to their ultimate success. Several of them have been doing good work.

12023. Is not the introduction of volumetric system hampered by the subtleties evolved by the Board of Revenue in Madras?—I am not aware what subtleties the question refers to.

12024. You had in your Presidency from 1880 to 1906 different systems of water rate, a differential system, a fixed rate system, and a consolidated system. At one time or other the Board of Revenue recommended these and two or three years later they objected most strongly to one particular system; I

was wondering whether these subtleties were not evolved by the Board of Revenue themselves?—I do not know who is responsible.

12025. *Dewan Bahadur Raghavayya:* There is a certain amount of vagueness on the question of the liability of the land revenue being enhanced on water being brought to dry land. Do not the Settlement Rules at present state that during the currency of a settlement if water is made accessible to dry land and the land be converted to wet, the land could be reclassified as wet and the wet classification applied to it, in which case the revenue due to the land as such would be greater than the revenue due to the land as dry, apart from the revenue due to water?—It might be greater or it might be less.

12026. Generally it would be greater, I take it, because you would not take the water to very poor lands, dry land. I am referring to the consolidated wet assessment method?—I should think it would generally be greater. It might be the one or it might be the other.

12027. And that enhancement could be effected even during the currency of a settlement or at the next settlement if an area of dry land is converted into wet by a new irrigation project?—The exact rate that would be chargeable is fixed by a provision in the settlement notification for the district, and of course at the next resettlement it would be liable to an enhancement.

12028. At the next resettlement? Even during the currency of a settlement if a land gets new irrigation then it could be re-classified and the assessment enhanced immediately; and at the time of the next resettlement the assessment could be enhanced more than 18¾ per cent which is the maximum prescribed for land in regard to which no improvement had been effected or in regard to which no re-classification of soil takes place?—I am not sure I have caught the point.

12029. If a re-classification of soil takes place on resettlement, this limit of 18¾ per cent enhancement does not apply?—No. But re-classifications are unusual.

12030. They are unusual, true. But if an area is brought under an irrigation project you will certainly re-classify if it is considered that the quality of the soil as wet land would be different from its quality or classification as dry land?—It might be necessary, yes.

12031. If lands which are now on the margin of cultivation or lands which are now non-classified and which are not therefore held on *pattah*, could as a result of agricultural research be successfully cultivated, there would be a very considerable accession to the revenue of the Government, is that not so?—Yes.

12032. We have extensive areas of such land in this Presidency?—Roughly 6 million acres, I believe. 12½ million acres of which perhaps half would be capable of being cultivated. 12½ million acres is the cultivable waste according to our accounts.

12033. *Sir Henry Lawrence:* What are the 6 million acres you refer to?—Waste, cultivable land.

12034. In the whole Presidency?—Yes.

12035. What is the distinction between these 6 millions and the 12½ millions?—A lot of it is uncultivable.

12036. *Dewan Bahadur Raghavayya:* According to accounts there are 12½ million acres of land which are cultivable but not held on *pattah*, that is, which are not held by ryots on *pattah*. May I take it that at least half of that area could be cultivated if, as a result of agricultural research, better methods of cultivation are discovered?—Yes, that is so.

12037. *Professor Gangulee:* In your final report the cultivable waste in this Presidency is stated to be over 12 million acres. How is it you say it is 6 millions?—I do not suppose more than 6 millions of it can be used. It is undoubtedly beyond the margin of cultivation.

12038. *The Chairman:* Economically unculturable under the present conditions?—Yes.

12039. *Professor Gangulee:* There are no data to go on?—It is my opinion.

12040. *Dewan Bahadur Raghavayya:* One question in regard to the concession referred to by the Chairman, that is freedom from assessment in the case of lands in the ryot's holdings which may be set apart for grazing. We now exempt from assessment, from water rate, all fodder crops and green manure crops. You do not, I believe, anticipate much difficulty? I take it that you have no great objection to such areas set apart for pasture being exempted from assessment?—I have not considered that question. I should like to consider it before giving an opinion. There might be practical difficulties about it.

12041. May I suggest that there is one difficulty. One reason against giving that concession is the risk of the concession being abused and large areas of poor lands being reserved for pasture by ryots who do not own a sufficient number of cattle but who would like landless people with cattle to graze on those lands?—Yes.

12042. There is that risk?—Yes.

12043. And you also probably foresee the risk of a substantial diminution in the land revenue from dry lands?—Yes, that is right.

12044. Now in regard to loans under these two Acts, the Agriculturists' Loans Act and the Land Improvements Loans Act, do you agree with me from your experience that the extent to which these Acts are availed of by the ryots is limited mainly by the amount of money that Government make available, and that if Government could give more money the ryots would be willing to utilise all that money? Is it your experience that Collectors are unable to advance to the full the allotments made by the Board under instruction from the Government?—I do not think there has been any difficulty in disposing of their whole allotments.

12045. I also believe it is your experience that if you want to push loans in any particular area and appoint a special officer you get the work done in a remarkably short time?—Yes. Of course it is done much more quickly.

12046. And it has not been the experience of Government that any substantial portion of these loans advanced are irrecoverable?—It has not been my experience during the time I have been in charge of the work.

12047. Almost the whole of such advances are recoverable?—That has been my experience.

12048. To a question put by the Chairman about the total indebtedness of the ryot population, your answer was that there were no statistics. We have no statistics which show the entire indebtedness of the ryot population; but is it not within your knowledge that special economic enquiries conducted in typical villages by our Settlement Officers during the last two or three re-settlements have disclosed that about 75 per cent of the ryot population is in debt?—I think that is correct, in these villages.

Sir Henry Lawrence: Disclose the percentage which is indebted?

Dewan Bahadur Raghavayya: And the extent also.

The Chairman: And the extent to which the debt is secured and unsecured?

Dewan Bahadur Raghavayya: The debt is mostly secured.

12049. *Sir Henry Lawrence:* Could you produce any figures to show the extent of the indebtedness and the extent to which it is secured? If these enquiries have been made, can you let us have the results?—Yes.

12050. *The Chairman:* Perhaps you might put in a statement?—Yes.

12051. *Dewan Bahadur Raghavayya:* With regard to secured debts, have we not figures in the Registration Department which give us the total annual indebtedness of the people? It may not mean that the total 75 per cent is agricultural population; but we have figures, have we not, showing the total extent to which people in the Presidency borrow on mortgages and the total extent to which they sell lands?—From the Registration documents, yes.

12052. And the value of the property which is held, the sale value of the property and also the amount which is raised by mortgaging the property?—Yes; but there are possibly transactions which are not registered.

12053. They are not valid according to the Civil Law, is not that so?—I am not a great authority on that particular point.

12054. Am I right in assuming that from what you said some time back you would like agriculture to be brought under the Board of Revenue as it was some time ago?—No. I merely meant to express a pious regret that it had been taken away.

12055. You do not go so far as to say that the department should be brought back under the control of the Board of Revenue?—No, I should not, I have not gone into that question seriously.

12056. What do you think is the amount of touch that exists between the Revenue staff of the district and the staff of the Agricultural Department working in that district?—It is some years since I was a Collector and I am not in a position to say.

12057. Well, I will not pursue that. In regard to this question of the survey of subterranean sources of water you are aware that the district of Bellary is the driest district in the Presidency with the smallest number of wells correspondingly or proportionately?—I think Anantapur is slightly drier. There is not much difference between the two.

12058. The number of wells in Anantapur is much larger?—Yes.

12059. Bellary is as much a dry district as Anantapur?—Yes.

12060. You would agree to a survey being made at least in the districts of Bellary, Anantapur, Kurnool, Cuddapah and Ganjam. I do not know about the physical condition of the Ganjam soil. If in Ganjam also it is difficult to find water then in all these districts you would advocate a survey to be made?—I am not sure I would advocate the survey to be made on the lines already made which do not seem to be very practical. I think the matter should be examined as to whether we could get some more definite information about our underground supply of water; on what lines I am not in a position to suggest.

12061. *The Raja of Parlakimedi:* In ryotwari areas when a dry field is converted from its *manawari* conditions, that is entirely dependent on the rains, to wet, is it not assessed differently?—No, not unless water is taken from a Government source of irrigation.

12062. The ryot actually pays dry assessment though he cultivates paddy entirely upon rain irrigation or some other non-Government sources?—Yes.

12063. Irrespective of zamindari or ryotwari areas, is it the duty of the village accountant or village headman to furnish Government with information regarding crops?—Yes.

12064. For such things as births and deaths it is the village headman. For the first report about famine and other things, I think the village *Nayudu* has to report?—About famine?

12065. Yes?—We do not depend upon the village headman for information about distress.

12066. Are not his views taken at all in the matter in the very early stages?—The lowest official, I think, whose views are reported is the Revenue Inspector in his weekly season and crop report.

12067. He gets of course the signatures of these group *Nayudus*?—The Revenue Inspector?

12068. Yes?—No.

12069. For epidemics, the village *munsifs* are relied upon for report?—It is their business.

12070. On page 264, paragraph 3 of question 7 you say the status of a person in a village depends to a great extent on whether he possesses land.

Now, in the case of the village staff, would you suggest that, in place of remuneration in cash, land may be provided?—I think it is too late in the day for that.

12071. You would not like to say anything on that point?—Not without some consideration.

12072. Then on page 268, with reference to question 8, it would not be better to hold the *munsif* responsible for water distribution? I mean to say for the proper consumption of water for the second crop. Of course, you know in certain parts they entirely depend upon water from tanks and canals, for second crop especially. Would you not hold the village *munsif* responsible to see that the water is not wasted?—Instead of leaving it to the ryots themselves?

12073. Exactly?—I am not sure whether it would make any difference.

12074. Then just a general question on the encouragement of private bodies to take up irrigation works. In the present law as it stands the parties concerned cannot effect a contract between themselves and it should be confirmed by a court of law. Would it not be better, if the contract was effected on *bonâ fide* grounds by the parties concerned, that the mere registration of the document should make it valid?—I am not sure that it would make very much difference.

12075. Of course at present they have to go to court unnecessarily whether they wish to or not?—If they both agree the proceedings in court are purely formal I think.

12076. *The Chairman:* Entirely inexpensive?—I do not think very expensive.

12077. They cost something?—Some stamp duties.

12078. *The Raja of Parlakimedi:* What do you think of this? Would you stick to the present system or would you alter it?—It has never been suggested to me that the present provisions cause inconvenience. I never found that throughout my district experience. It was never suggested to me that they hampered the carrying out of improvements.

12079. For instance, if it is agreed by both the parties that they go to court simply for registration, that is, without going into actual consideraion of the area and the circumstances of the works, the courts may nevertheless substantially reduce the rates agreed upon by the ryots?—I have not come across any such case.

12080. There is no harm in having such laxity?—I would not, until the necessity for altering the present position was proved to me.

12081. There would be no harm in altering the regulation and cutting out the courts altogether?—It could not be done without legislation.

12082. Should this pressure come from the Collector or be brought to bear by the Provincial Legislature?—I think pressure should come from the Legislature.

12083. *Sir James MacKenna:* You have told us that the Board of Revenue have nothing to do with the Agricultural Department. Can you tell me whether Co-operative Credit and Agriculture are all under one Minister?—They are all under the Development Minister at present.

12084. And the orders of that Minister issue as orders of the Government of Madras in the Development Department?—Yes.

12085. In the course of your long experience as a district officer have you come across large zamindars and large landholders who take particular interest in the operation of the Agricultural Department?—Yes.

12086. How far does that interest extend to anything like operations in their own lands?—The case I was thinking of was the Parlakimedi estate which has an agricultural farm.

12087. Can you think of any other?—Several estates that pass through the hands of the Court of Wards have agricultural farms.

12088. Apart from that have you seen any particular interest on the part of the zamindars; we have got to look to them for help in the dissemination of the results?—It has not come to my notice.

12089. It is only in cases where the estates have been under the Court of Wards?—Yes, I think so.

12090. *Professor Gangulee:* I desire to ask you one or two questions of a preliminary nature. In reply to the Chairman you have stated that there has been considerable agricultural improvement in this Presidency. Is that improvement in respect of the unit of cultivation or do you mean the improvement obtained by the extension of cultivation?—I mean the ryots are getting more and better crops than before.

12091. Has the yield per acre of food crops increased?—I think the value of the cotton crop has considerably improved since they adopted the seed provided by the Agricultural Department.

12092. That is, you base your remarks chiefly on the extension of cultivation and the introduction of commercial crops?—I am not basing them so much on the extension of cultivation as on the improvement of the crops.

12093. Per unit per acre?—Yes.

12094. For instance, take the case of transplantation of paddy. In what percentage of the total area under paddy has the single seedling method of transplantation been adopted?—I could not tell you.

I find from the *Statistical Atlas of the Madras Presidency*, that 2 per cent. of the total area under paddy is under this economical transplantation.

12095. In determining assessment do you depend on the soil?—At the original settlements we did.

12096. And at further settlements?—We usually take into consideration the question of prices, the increase or decrease in the price of the land, and the general economic condition of the tract, as compared with the last settlement.

12097. I am referring to soil classification, showing various types of soil; do you depend upon that?—At the original settlements in the Presidency there was a soil classification; at resettlements it is usually a percentage enhancement.

12098. At resettlements you do not take into consideration classification of the soil; do I understand you right?—We do not as a rule re-classify the soil.

12099. You also depend upon the kind of crops grown; do you not?—At the original settlements we took the staple foodgrains of the district and based our rates on that. We took the average outturn in the field and made deductions for cultivation expenses and other expenses, and we arrived at the net total; something less than half of that was taken as a reasonable assessment.

12100. Do you know whether any soil survey has been undertaken in this Presidency?—I am not certain.

12101. Not by the Department of Agriculture?—I do not know.

12102. Judging from the statement that you have given us (the memorandum on land settlement), I have the impression that the Board of Revenue depends largely on its revenue officers for agricultural information, that is information with regard to soil and the kind of crop, etc. Do you think capacity for getting reliable information regarding agricultural conditions and some knowledge in scientific agriculture will be helpful to the revenue officers?—It would not do them any harm; I do not know whether it would do much good.

12103. Knowledge never does harm to any one; but do you think such information would help them in discharging their duties efficiently, make them more efficient officers?—I should like to know what details you are referring to.

Mr. N. Macmichael.

12104. I am referring to this fact; in fixing the assessment of a certain area you depend upon the class of soil, whether it is clay, sand and so on; also you depend on the kind of crops grown, and also on the outturn. These are essentially agricultural and economic data?—Yes.

12105. So, in order to understand these data properly I feel some sort of education in scientific agriculture might be useful and perhaps essential to revenue officers?—We very seldom have any re-classification of soils now. The classification, as I said, has already been done at the original settlement. At a resettlement the factors that are taken into consideration are increase in prices, increase in the monetary value of land, and generally the economic condition of the tract. From that point of view a technical knowledge of agricultural science is hardly necessary.

12106. When was settlement first carried out in this Presidency?—The original settlements were carried out in the sixties.

12107. With regard to *taccavi* loans, can you give us an idea of the formalities through which a ryot has to go before he obtains the loan?—He puts in an application to the Tahsildar, which is usually sent to the Revenue Inspector who enquires. His enquiry is chiefly directed to, seeing whether the security offered is sufficient; he has got to make enquiries as to the market value of the land, and this he does by local inspection and examination of sale deeds, he has got to see whether the application is *boná fide*, for instance, especially in the case of loans for buying cattle, whether the man who wants the cattle really has land to cultivate, or whether he wants the loan for other purposes. The Revenue Inspector sends his report to the Tahsildar, who passes orders on it himself if it is a small loan, or sends it to the divisional officer, the Deputy Collector, if it is a large amount.

12108. What time is involved in all that process?—That depends very much on the staff and on the nature of the case. If you get a special staff and a perfectly simple case the loan might be granted in a week or ten days; on the other hand, if the ordinary establishment deals with it, and if there is a lot of other work to be done by them, there might be considerably greater delay.

12109. *Mr. Calvert:* Is land the security under both Acts?—Land is the usual security; under the Agriculturists' Loans Act personal security is also accepted.

12110. For loans under the Land Improvement Loans Act?—Land is the usual security.

12111. *Professor Gangulee:* Are you of opinion that these *taccavi* loans have really reached the average small holder?—In a good many. cases they have, I think.

12112. Could you tell the Commission what percentage of the total applications has been refused during the last five years?—I can supply you with those figures, but I cannot give them off-hand.

12113. You can submit an account of the percentage of the total applications refused during the last five years?—Yes; we have got these figures.

12114. Do you grant these loans on the security of crops?—No; we would not grant them unless the man had occupancy right in the land.

12115. We have been told that in other Provinces they are trying to make these *taccavi* loans popular through co-operative societies. Would you approve of the suggestion of making the Department of Agriculture or the co-operative societies, where they exist, agencies for granting these *taccavi* loans?—No; I do not think I should.

12116. You do not approve of that suggestion?—I should prefer the ryot to look to the co-operative societies rather than to Government for his loans.

12117. You would not utilise the co-operative societies for popularising *taccavi* loans?—No; I should prefer the ryot to go to the co-operative society, but the co-operative society should get the money from the central banks or urban banks.

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12118. With regard to your answer to question 7, you tell us that Government "actively assist" the cultivator in sub-dividing his land. I do not understand the words "actively assist." Would you explain?—When a man sells part of his field and wishes the other part to be separately registered in his name, we have the measurements taken and the two plots separately registered in our records and plotted in our field maps.

12119. That is "actively assisting" him?—Yes; perhaps it is not a very good expression.

12120. You say on page 264 "Most of the smaller ryots have also subsidiary occupations." On what facts and figures do you base that statement?—I say that from my general administrative and executive experience.

12121. It is your impression that most of the ryots in the Presidency have subsidiary occupations?—The smaller ryots.

12122. What particular occupations have you in mind; spinning or weaving or basket making?—Yes. In some cases they do a good deal of agricultural work for the larger landholders as well; if the man has a cart and bullocks, he will do carting work and so on.

12123. You think that most of the ryot's time is fully occupied?—No; I do not know.

12124. One or two questions about irrigation. How many acres have you under tank irrigation? Can you give us an idea?—Tanks as distinguished from canals?

12125. Yes?—I cannot give the figures off-hand.

12126. *The Chairman:* Probably the irrigation officer will be able to put them before us?—In the figures I gave both are included.

12127. *Professor Gangulee:* Yes, I notice that. One word about Irrigation Panchayats. Are these Irrigation Panchayats already in existence or have you only just started to form them?—A few have been in existence for some years.

12128. What purpose have you in view in suggesting the formation of Irrigation Panchayats?—Most of them have been formed to arrange for the distribution of water; in some cases also to clear the channels of silt.

12129. Do you think such a system would lead to better administration also?—In some cases they are quite promising.

12130. Do you think such a system will also help to develop a sense of responsibility amongst the villagers?—Yes; I should think so.

12131. Just as in the case of Forest Panchayats which they say have been successful, you want Irrigation Panchayats on the same principle. Is there any scheme before you for restoring these tanks that are silted up and cannot be used for irrigation?—We have what are called Tank Restoration Parties which work in various districts preparing estimates, and bringing up the tanks in the districts to a certain level of efficiency. In some cases that involves the repair of tanks that had been abandoned for some time.

12132. *Mr. Calvert:* Do you think there will be any difficulty in the Board of Revenue giving us an introductory note, something on the lines of the Introduction to the *Statistical Atlas* on the general economic position of Madras rural areas?—That could be done.

12133. Madras has given us no introductory summary at all. For instance, we do not even know the cultivable area in Madras?—That can easily be given.

12134. It would be useful if we could have this introductory chapter reprinted in a shorter form?—Yes. That could easily be done.

12135. Could you give us figures showing the classification of holdings by size of holdings?—We can give you figures according to the assessment paid, that is probably a more accurate criterion in this Presidency of the value

of the man's holding than the acreage is. I mean we have got figures to show how many ryots pay under Re. 1 as assessment, how many under Rs. 10, how many under Rs. 30, and so on.

12136. Can we have a statement giving the totals with the acreage in each class?—Yes; I can give the total acreage.

12137. That will give us the ryots' holdings, but you have no figures, I understand, showing the cultivators' holdings, including the tenants?—We have no record of the sub-leases.

12138. According to the figures here given, about 19 per cent. of the total population are tenants; that comes to about 8 million people; have you any information as to the economic position of these 8 million people?—These tenants, did you say?

12139. They are shown as tenants; 31·5 per cent. landowners and 19·2 per cent. tenants; that is about 8 million people?—There is a good deal which is scattered about in Settlement Reports and such other documents; I am not aware that it has all been gathered together.

The Chairman: Probably, the best way would be to put in a complete statement of the information that we required, and to ask the Government of Madras to provide us with as much as possible.

12140. *Mr. Calvert:* Would it be possible to say how many of these 8 million people have any fixity of tenure, and how many are merely tenants at will?—Does the question refer to ryotwari land?

12141. This is the total population?—Then that will include the zamindaries; we have no accurate figures with regard to the zamindari areas.

12142. In ryotwari areas, can these tenants obtain loans under the two Acts?—No; they have no occupancy right; only the man with occupancy right can get it; it is the *pattadar*, the ryot who has the occupancy right.

12143. Generally, are Government doing anything special for the economic uplift of these 8 million tenants?—Not that I am aware of.

12144. Apparently, nothing?—We have no legislation protecting them; there is nothing in the way of restricting the rents that the owner takes from them.

12145. *Dewan Bahadur Raghavayya:* Cannot the tenants get advances under the Agriculturists' Loans Act? Under the Land Improvements Loans Act property security is required, but under the Agriculturists' Loan Act cannot they get loans in times of scarcity for seed and purchase of cattle?—They can, if they give proper security.

12146. Tenants-at-will?—Yes; if they give proper security they can get it.

12147. *Mr. Calvert:* On the question of State loans, I have not yet quite understood the position. I understood you said in reply to some other Member that you are satisfied with the total sum of the loans advanced?—Yes, that is correct.

12148. Of the total cost of cultivation, the greater part is met either by the labour of the cultivator and his family, or his cattle, or by labour paid in kind at the end of the harvesting. Could you give any kind of the figure showing the cash expenditure required per acre; would it be Rs. 2, Rs. 3, or Rs. 4, per acre?—It would be very much according to the size of the man's family and so on.

12149. Would it be Rs. 5?—It would vary a great deal in different circumstances.

12150. Very small in any case?—Yes.

12151. I see your average of loans advanced for 10 years is Rs. 17 lakhs, which is less than 1 anna per cultivated acre?—Yes.

12152. And in normal years your advance is merely a few pies per cultivated acre. Do you think that is a satisfactory position?—I do not think the ryot should look to Government in normal years to finance him.

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12153. I see from the figures here that the Punjab Government gave double the sum that Madras Government gave for the same year, and still they are dissatisfied with the amount they are distributing?—As being too small?

12154. As being too small?—My view is that in normal years the ryot should not look to Government to finance him.

12155. It is a question of Government *versus* the moneylender?—I should prefer the co-operative societies to take the place of the moneylenders.

12156. But your co-operative societies only touch about 8 per cent. of the rural population; there are still 92 per cent. that have to go to Government or the moneylender?—Yes.

12157. Has any estimate been prepared of the sum borrowed annually from the moneylender?—For the whole Presidency?

12158 Yes?—Not that I know of.

12159. I gather that of these loans advanced, very little indeed has to be written off as irrecoverable?—That has been my experience.

12160. I do not quite understand why you say that relaxation of the rules would be possible only at the expense of the general tax-payer?—We now only insist on security to the value of the loan that we grant: formerly, we insisted on security of the value of 25 per cent. in excess of the loan granted. It is very difficult to fix the market value of land. We fix it with reference to the market value of similar lands. When there is a forced sale by Government, which is the most unpopular of sales, it is very seldom that that figure is obtained. If we relaxed these rules, we should probably have more forced sales, so that we could not recover anything like the amount advanced.

12161. But are forced sales any considerable proportion of the total?—They have not been so, so far, in my experience; but I think they are likely to be greater, in consequence of the increased advances we have made in recent years; especially as the greater part of these loans was granted in the districts of Anantapur and Bellary, very poor districts, and when the loans come in for repayment, I think that the proportion of the irrecoverable items is likely to increase.

12162. Of the total number of ryotwari *pattas*, say 4½ millions, a very small proportion, indeed, of these are actually receiving loans under these two Acts?—A very small number.

12163. That is 1 anna per acre?—Yes.

12164. We have some other evidence of schemes for land improvement, which are being held up for want of funds under the Land Improvements Loans Act. Is there any difficulty in getting funds for these loans?—Once or twice I have had to worry Government a bit to get as much as I wanted, but, as a rule, I have ultimately got it.

12165. I do not understand what difficulty there can be, under the present Reforms scheme, in providing money required for loans?—It may happen that in the middle of the year there may be a demand as there was two years ago, after the floods, and there may be no budget provision; that makes it difficult.

12166. But the Loans Fund does not go into the regular budget, it is separate?—It is a separate budget, but we budget to get so many lakhs of rupees for loans in the year. If the demand for loans is suddenly greatly increased, it may not be possible for Government to supply all the money even out of the loans budget.

12167. Has your Board of Revenue ever considered the suggestion that, instead of advancing the loans under the Land Improvements Loans Act, they should themselves carry out the improvement, and recover the cost over a period of years by a special acreage cess?—I do not think so.

12168. The net result would be almost the same, of course?—It would involve a good deal more of Government interference, I think.

12169. And better insurance that the money was being spent for the object intended?—It would make Government even more paternal than it is. I think.

12170. The question is one of dealing with these petty cultivators; it would be difficult to leave these petty cultivators entirely to themselves, would it not?—I do not think the suggestion would ever be made.

12171. I am sorry to get back to this question of water rate; I still cannot understand it. If you open a new canal to-day on a formerly dry area, what happens in the way of recovering your water dues?—We fix a water rate, which will bring in a sufficient return, and charge that in addition to the assessment which the land has already been paying.

12172. You charge an acreage rate?—Yes, an acreage rate.

12173. Varying slightly with crops?—Well, we have got roughly two rates, for wet crops and for dry crops; the rate for wet crops is usually about twice the rate for dry crops.

12174. Would sugarcane, cotton and millets pay the same rate?—Sugarcane would be treated as a double wet crop; it would pay, as a rule, one and a half times the rate for a paddy crop; the actual rates vary under different projects.

12175. Who would pay that rate?—The *pattadar*, the man who is registered in our accounts.

12176. That is to say, if he has given his land out to a tenant-at-will, the tenant will pay nothing to you?—That is an arrangement purely between the *pattadar* and the tenant-at-will.

12177. So that your water rate is paid out of the rent and is not treated as part of the cost of cultivation?—As between the owner and the tenant?

12178. As between Government and the cultivator?—We have nothing to do with the cultivator.

12179. But he has taken your water?—We only deal with the man who is registered in our accounts as the owner of the land.

12180. How can that cultivator then get your water without the consent of his landlord?—That is an arrangement between him and his landlord.

12181. You are not getting past the landlord direct to the cultivator?—No; we do not go to the cultivator, so far as the collection of the water rate is concerned; I am talking of Government lands.

12182. Surely, you admit that the giving of water from canals has increased the profits of cultivation?—Of course.

12183. Should you make no claim at all on those increased profits?—We are getting that in our water rate.

12184. You have taken that in increased rent; you take nothing at all from increased profits?—It comes to much the same thing; as I understand the problem, it is much the same thing.

12185. It would make a big difference whether your schemes are productive or not?—We fix the water rate so as to make the schemes productive, provided it is a water rate that the *pattadar* will be prepared to pay.

12186. Is there any difficulty here in the landlord enhancing the rents so as to cover your increased demand?—Is the question about ryotwari lands?

12187. Ryotwari *patta* tenants?—There is no legislation regulating the rents that a ryotwari *pattadar* can collect from his tenant. It is entirely a matter of contract between them. Our Tenancy Act only applies to permanently settled estates, zamindaris.

12188. I see; in ryotwari tracts then the tenant is not protected against any enhancement of his rent?—He is not protected.

12189. Is there in this Presidency any one or anybody charged with thinking out schemes for rural development,—a Rural Development Board or anything like that or Development Commissioner?—If I can have an example of the sort of scheme the question refers to, I will probably be able to answer the question.

12190. You had many examples of these land improvement schemes awaiting funds?—There is not any, so far as I am aware.

12191. I think Madras is trying a new land mortgage scheme? That is not under you at all, is it?—No.

12192. You have the water rate charged before your 30 years' settlement comes to an end. Do you fix your wet assessment for the same period as dry assessment?—Yes.

12193. I mean if you introduce irrigation now to dry areas, a water rate which would be heavy in the first year would become very light in five years, say when the ryots have got used to the utilisation of the water?—As things stand at present we might introduce a sliding scale of water rates starting low and gradually rising as the benefits become greater.

12194. You can fix a rate for five years and then revise at the end of five years?—The water rate, yes.

12195. Is fragmentation admitted here to be an evil?—Certainly, if I were a ryot I would much prefer to have my land all together than scattered in small patches.

12196. But there is no actual enquiry into the extent of the fragmentation?—I do not think it has become a burning question yet.

12197. But surely in India things do not become burning questions; they simply lie for hundreds of years?—Perhaps.

12198. Is any attempt being made in this Presidency towards educational propaganda in favour of consolidation?—I do not know what the Co-operative Department have been doing. I believe they made some enquiries into the matter, but what exactly they are doing I cannot tell you.

12199. Your land revenue assessment is based largely on the net produce, is it not?—Yes; it is based upon net produce.

12200. But when a ryot sinks a well at his own expense you do not increase his assessment at the termination of the present settlement?—No.

12201. But why not, if you are assessing on net produce? Why do you not assess him for water?—Because one of our principles is that a ryot's improvements should not be taxed.

12202. Not even after 30 or 40 years?—Sometimes it may be in practice difficult to avoid it; but so far as it is possible to avoid it, we do. In this case we simply charge him the percentage increase.

12203. But are you not thereby losing a large source of revenue which might be devoted to the improvement of the lot of the rural population?—We should probably discourage well sinking; if the ryot knew his liability to enhanced assessment at the end of the settlement period, it would discourage him.

12204. Have you any figures to show that well sinking in Madras under your system is any more progressive than, say, in the Punjab where after 20 years we assess it?—No; I have no information at all.

12205. It is an idea not based on actual data?—The Madras ryot is very sensitive to the possibilities of an enhancement of his assessment otherwise than by the well-known principles on which we do enhance it.

12206. We give him a remission calculated to bring him double his expenditure; and after he has recouped double his expense, we then assess his improvement thereby gaining some money which is available for the improvement of the lot of the agricultural population. Is there any special reason why you should not do that?—Yes. This principle has been in force for such a long time that it would create great discontent to abandon now. It has been in force for about 60 years and it would cause great discontent to revise it.

12207. But you would like to have the money, would you not?—I should like to see the ryots digging more wells.

12208. It has been suggested to us that to encourage the taking of Government loans, a separate department or a separate agency, an *ad hoc*

agency, should be introduced. Would you approve of that at all?—We actually do that. In a bad season when there is a large number of applications we at once put in a special establishment to deal with it. That I think is sufficient.

12209. The real trouble is not in the distribution but in the recovery?—Yes; there is always more trouble when you try to recover the money.

12210. You cannot simplify the recovery procedure?—No; I think it is quite reasonably simple as it is.

12211. I gather your wells irrigate on the average about 2½acres. Could you give us just a rough idea of the cost of that kind of well?—It varies according to the depth to which the ryot has to go for water. Sometimes he has to go to 15 feet and sometimes he has got to go 40 or 50 feet.

12212. Would a 2½-acre well cost Rs. 500?—Rs. 500.

12213. I am talking of the cost of improvement per acre. Now, judging from the figures we have got here the average cultivated area per cultivator is round about 6 acres in Madras?—Yes.

12214. That means you must have a very large number of people below, say, 5 acres.—Yes.

12215. From your experience of this Presidency do you think there is any hope of promoting the welfare and prosperity of those under five-acres men, by agricultural loans?—By agricultural improvements?

12216. Yes?—It all helps a bit.

12217. Not much?—Of course, not.

12218. I mean if you double the outturn of the 2½ acres limit he is on the five acres limit; if you double the outturn of the five acres man he is on the ten acres limit. But you still have got the poor?—Yes; if you double the outturn the population does not double itself, but it increases considerably.

12219. Would you go so far as to say that the problem of promoting the welfare and prosperity of the agricultural classes is not an agricultural problem exclusively?—I do not think it is exclusively an agricultural problem.

12220. In this Presidency one gathers that no attempt has been made to make a detailed examination of the economic position of the ryot?—Many economic enquiries have been made in regard to definite villages.

12221. By Dr. Slater?—Every Settlement Officer makes economic enquiries in selected villages in the districts that he is reporting on.

12222. Do you find those valuable from the economic point of view; he has to be so cautious in all his estimates?—They are the most valuable reports we have got in Madras, so far as I know.

12223. But even those reports would not throw much light on this class of 8 million tenants?—I do not think they would.

12224. There is no information readily available as to their condition?—Not that I am aware of.

12225. *Mr. Kamat:* What is the composition of your Board of Revenue?—There are three Members; one Member is in charge of Excise; another is in charge of Land Revenue which includes Court of Wards; the third is the Commissioner of Revenue Settlement which includes the duties of Famine and Flood Commissioner. Generally we look after the revenues of the Presidency.

12226. Is there any correlation or co-operation between this Board of Revenue and the Department of Agriculture, I mean the Minister of Agriculture, and, if so, in what manner do you achieve it?—We are occasionally consulted by the Development Department, on various questions.

12227. But in a question like the prosperity of the ryot, is there any method of active co-operation beyond mere casual consultation?—I do not think I can answer that off-hand.

12228. May I take it then that both the departments go their own way without a definite correlation or concerned action for the welfare of the

ryot?—I am not sure that I would like to agree to that without a little more consideration.

12229. May I know what is the total land revenue of this Presidency?—It is about 7½ crores, I think; that includes water rates.

12230. Including irrigation water rates?—Yes.

12231. And out of this total revenue you expend on land improvements under the Land Improvements Loans Act, about 2 lakhs or a little over 2 lakhs per annum. Is that right?—The figures are, I think, 37 lakhs for the year ending June 1925.

12232. Roughly, during the last five years, can you tell me what the average was?—The average for the last ten years was 17 lakhs odd.

12233. This is the total under both Acts?—Yes.

12234. I am asking you with regard to the Land Improvement Act. I do not mean the loans which you recover. I mean the money which you give for the improvement of lands such as for wells, funds and so on?—That would include repairs to irrigation works.

12235. Do you include repairs to tanks?—I think I have given the answers in my paper on Irrigation.

12236. Does it come to roughly 30 lakhs?—We spend 30 lakhs on irrigation works for which we keep no separate accounts; the revenue we get is about 90 lakhs and we spend about 30 lakhs.

12237. I have those figures. I am referring to the improvement of the lands of the ryots. I want to know out of your total revenue of 7½ crores how much do you use in helping the ryot to improve his land?—Do you mean apart from the loans that we grant him?

12238. Yes?—In what kind of improvements?

12239. By means of wells or ponds?—Wells are dug by the ryots themselves. Government help by giving them loans. Government do not dig wells themselves.

12240. No, but even in respect of advances for loans how much do you set apart from your revenue?—I do not think the figure is taken as any definite share of the revenue; it is fixed in accordance with the probable demands for loans.

12241. As regards your *taccavi* loans, what is the general rate of interest that you charge the ryot?—At present it is 7½ per cent.

12242. What is the prevailing rate of the ordinary moneylender?—It varies a great deal.

12243. Have you got an idea of the minimum and maximum?—Roughly perhaps 12 to 20 per cent would be a fair figure; it would also go beyond 20; say from 12 to 30 perhaps. That is a very rough figure.

12244. Have the Board ever enquired into the ways of the moneylender in view of the fact that after all the moneylender partly represents the indigenous banking system with which the Government will have to deal either in competition or as a factor in the rural economics of the country; I mean why the moneylender charges such a high rate, what difficulties he has in recovering his loans such as delays of law and other things?—Of course we know to some extent why he charges such a high rate.

12245. But you have conducted no detailed enquiry by calling moneylenders or looking into their books?—Not to my knowledge.

12246. Therefore the Board of Revenue know only as a matter of hearsay about the ways of the moneylender in the country?—As for the Board of Revenue, it is not their business. I am not sure they take it on hearsay. If they are to act upon such facts they would not depend upon hearsay.

12247. In answer to the Chairman when he asked you whether you had any concrete proposals to make for the welfare and prosperity of the ryot you said "the solution lies in encouraging the spirit of thrift." Your answer implies, I suppose, that there seems to be extravagance on the part

of the ryot?—I mean that in my opinion there is a want of this spirit of thrift.

12248. Which is as good as saying that there is some extravagance somewhere?—Yes, I think you may put it like that.

12249. As an experienced officer you are convinced that the ryots are extravagant?—Yes; from my point of view the ryots are in many respects extravagant.

I want to ask you a few questions in order to go more closely into this theory of extravagance for the simple reason that we ought to know and probe to the bottom a matter in which the Board of Revenue are presumably basing their solution of many difficulties of the agriculturists. I hope you will give me well-considered answers.

12250. Extravagance is a relative term, is it not?—Yes.

12251. I mean in relation to the income of a man and other factors?—Yes.

12252. When you say there must be extravagance in the country it presupposes that there is some earning power somewhere and that that earning is misspent in some wrong directions. It is a question of bad spending, I think?—I give an example of what is in my mind. For instance, some of the people spend a great deal of money on arrack and toddy; some on marriages; so some of them are extravagant, looking at it from my point of view.

12253. I presume you are fairly conversant and familiar with the domestic ways of the villagers in this Presidency?—Well, I have seen a certain amount of it.

12254. It is usual always to test general principles by concrete cases. Take a hypothetical case. If a man has got, say, six acres of fairly good land and has to marry his daughter, supposing he spends Rs. 150 on that wedding to buy new clothes and some new silver trinkets or to feed a few guests; would you consider that an extravagant item?—It would entirely depend upon his income.

12255. That is exactly what I said at the beginning. Are you quite sure that there is large amount of extravagance in this country on marriages?—I am not sure if I said that; if I did, I merely intended to suggest that there was probably a good deal; but I should not like to be dogmatic on this question at all.

12256. When you said there was some kind of extravagance, were you quite sure that the man had the surplus which he spent on something else than proper lines and he had to borrow, say, for the wedding because he had no savings? Have you investigated this problem?—I have never made any detailed economic investigation. I certainly do not profess any expert knowledge on the subject.

12257. Then this remedy which you suggested of encouraging the spirit of thrift is purely an impression?—Yes, it is based on my general experience in this country.

I want to know what the presumption is.

12258. In your Presidency the irrigated portion of the area is about 10 per cent under canal irrigation, and 20 per cent under well irrigation. Am I right?—I do not think there is as much as that under well irrigation.

12259. I think it is somewhere in print in the papers supplied to us. I am taking these papers at their worth?—The extent under well irrigation may be about a million and a half acres.

12260. You can take it from me that it is from your published papers. Taking 10 per cent as under canal irrigation and 20 per cent under well irrigation, that means 30 per cent of your land is irrigated and 70 per cent. is practically dry farming. In your experience out of those 70 per cent. who do dry farming, is there any *primâ facie* presumption, that they have a surplus or saving which they can carry over, taking good and bad years together? Is it possible, I ask, under the present uneconomic condi-

tions of agriculture to have a surplus?—Our settlement rates are based upon leaving a considerable margin to the ryot after allowing for all his expenses.

12261. Theoretically it is true; but in practice 70 per cent. of your cultivators are living on dry farming. The natural presumption seems to be that there may be no saving out of which they can meet their marriage and other expenses. What I am driving at is this, that this theory of thrift for improving the lot of cultivators based only on an assumption of extravagance amongst the people should not be adopted as the basis upon which to deal with the whole problem?—I think I gave that simply as my own impression, not as representing the view of the Board of Revenue.

12262. You agree, however, that until further investigations are made to ascertain whether there is a saving in dry farming and until this is proved, the Board of Revenue should not proceed on this hypothesis that the cultivator is extravagant and requires only the inculcation of a spirit of thrift? —I should still be prepared to say that in my opinion the development of thrift in this country would be a great advantage.

12263. But do you not agree with me that further investigation is necessary before we can pin our faith to such impressions; otherwise we may proceed on an entirely wrong theory?—Of course the more facts we know the better.

12264. With regard to fragmentation, as Mr. Calvert put it to you, no attempt has been made to resuscitate this question in this Presidency ever since the Reforms? No investigation was done since Mr. Keatinge's time; his work in 1917 is the last word on the subject?—No, the Settlement Officer recently in Trichinopoly made enquiries; we had a short enquiry in a district that was recently resettled by a Settlement Officer.

12265. Was that before the introduction of the Reforms?—No, that was subsequent to the Reforms; that was about three or four years ago.

12266. I want to know whether your Minister of Agriculture or Development Officer has pursued this subject to find out the latest opinion?—The last enquiries that were made to my knowledge were made about 1922, by a Settlement Officer.

12267. Was it confined only to one district?—It was confined to only one district, to a few villages in that district.

12268. So that even there, the enquiry was more or less partial. Have your Co-operative Department done anything actively and vigorously in this direction? I merely ask for information; I know you are not in charge of the department. Can you tell me whether the Co-operative Department have made any serious effort. towards co-operative consolidation?—Not to my knowledge.

12269. So that the problem is more or less lying dormant?—Yes.

12270. With regard to irrigation matters, you say that in this Presidency there is the system to a certain extent of allowing the ryots to distribute their own water when it comes to their fields from the head channels. Is that right? —Yes.

12271. Has it caused any friction between the Irrigation Department and the Agricultural Department?—Not to my knowledge.

12272. Your Irrigation Department are quite satisfied with this system although it leads to waste of water?—I could not say whether they are satisfied with it or not. That is a direction in which I think there is considerable room for further investigation, investigation into the more economical use of water. So far as I know there has not been very much investigation in that line.

12273. You say the volumetric system will take about two decades to be introduced successfully, if at all. May I take it that till then you propose to fall back upon the present system of distribution of water, although it is wasteful?—I think it would be a very excellent thing to examine the question as to what can be done in that direction.

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12274. I want to know something about the emigration problem, again simply as a matter of informaton; I know you are not responsible for it. We are told that these emigrants go out to improve their financial position. Do they come back again to their holdings? Are they a fluctuating agricultural population?—Yes; in the district I refer to, Ganjam, it was a regular thing at the end of the harvesting season for a large number of labourers to go across to Burma.

12275. But they do not give up their interest in their land?—Most of them come back after six months when the cultivation season begins.

12276. So that they are a disturbing factor so far as the pressure of population on agriculture is concerned?—I would put it that it is very convenient for them to have work on hand in the slack season of the year; when there is very little agricultural work to be done, they cross over to Burma and get regular work there.

12277. *Rao Bahadur Muniswami Nayudu:* You told the Commission that the zamindari area in the Presidency is one-third of the total extent?—Yes.

12278. There are a number of tanks maintained by the zamindars; will you give us your opinion generally as to whether these tanks are being properly maintained and repaired from time to time?—My experience is that they are not so well maintained as in Government areas except when the estate has been in the hands of the Court of Wards. When the estate is under the Court of Wards they put the tanks and irrigation sources into order.

12279. So that in cases where the zamindar is not in the hands of the Court of Wards, the tanks are not properly attended to?—With a few exceptions that has been my experience.

12280. Is there any law which will enable the Government or the ryots to compel the zamindar to put the tanks into proper repair?—There is a provision in the Estates Land Act, but in my experience that provision has been practically a dead letter.

12281. That provision empowers the Collectors to call upon the zamindar to carry out the improvements, but it does not give the Collector power to carry out the improvement at the cost of the zamindar?—I think that is the case.

12282. Therefore, this provision is practically a dead letter now?—It also requires, I think, some proportion of the tenants to apply; I do not know exactly the causes, but I know it has been practically a dead letter.

12283. The provision was inserted in the Estates Land Act in 1908?—Yes.

12284. Do you think that some provision must be made to see that these tanks are kept in good order?—Yes; I think it would be a good thing if that could be done.

12285. Has there been any economic survey of the position of the ryots in zamindari villages?—Not to my knowledge, apart from possible special reports in times of famine.

12286. The Agricultural Department were under the control of the Board of Revenue until the Reforms?—I think the control was taken away before the Reforms, some six years ago, perhaps.

12287. As Collector you have been in touch with the people. Do you consider that the Agricultural Department have been responsible for some improvement in the matter of the agricultural operations carried on by the ryots?—Yes; they have done a lot.

12288. Do you think that those improvements have been sufficiently brought home to the ryots in the villages?—I think it would be a very good thing to increase the number of agricultural demonstrators.

12289. Do you consider that there should be more propaganda in the matter?—It is my general impression that an increase in the number of demonstrators, one perhaps for almost every taluk, would be a a great help to the spread of these improvements.

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12290. Your Revenue Inspectors are very much in touch with the villagers?—Yes.

12291. Would you consider the desirability of appointing graduates of agriculture as Revenue Inspectors so that they may carry on the propaganda work?—The Revenue Inspectors have quite enough work to do as it is, I think. I am not at all sure that an agricultural degree would be so useful because the Revenue Inspector expects to become Deputy Tahsildar and Tahsildar subsequently, and for that purpose a general education is more important than a specialised education.

12292. Supposing a graduate is taken up for training in the Agricultural College and takes a Degree in Agriculture also, would you consider that sufficient equipment for a Revenue Inspector?—Excellent.

12293. As Collector you were President of the District Board, about six or seven years ago?—Yes.

12294. So far as the maintenance of roads is concerned, it is only a few of the roads that are maintained by the Local Boards and not all village roads?—Quite a number of other roads too are very little maintained, I think.

12295. I mean to say with regard to roads connecting villages, not the main roads; it is only a very few of them that are being maintained?—I think so.

12296. The other roads are not maintained by any authority at all?—You mean the cart tracks across country?

12297. Yes?—No; they hardly require any maintenance; they are dry weather tracks.

12298. Are not many of them in a very bad state; do they not require to be restored to good order?—Which tracks?

12299. Cart tracks?—Well, on the red soils, they are good without any work on them; in Anantapur and Bellary you do not want any repairs to these tracks.

12300. In the black cotton soils?—In the black cotton soils, they are impossible to maintain in the wet weather; in the dry weather they are quite good.

12301. But in other places? I am referring to the generality of the roads in districts like Coimbatore, Tanjore and other places. Do you or do you not think that the village cart tracks require to be put in order, and if they are put in order the villagers will, by reason of the better communications given to them, be better off with regard to the prices they obtain for the crops they cultivate?—My impression of Coimbatore is that the village roads there are rather good, much better than in most other districts.

12302. Do you know that many of those roads are now being restored within the last two or three years?—They were starting that, when I was Collector in Coimbatore, in one or two places.

12303. *Sir Ganga Ram:* Who scrutinises your projects costing crores, I mean professionally? Is the Chief Engineer the final authority?—No; the Government are. Some of the larger projects require the sanction of the Government of India and of the Secretary of State.

12304. Do you submit the project in full detail to the Secretary of State, or do you simply take formal administrative sanction?—All I have to do with a large project is this: it is sent to me and the P. W. D. tell me how much they can irrigate; they tell me the approximate cost and I am asked to report if the ryots will take this water and if they are likely to pay a water rate that will make it productive.

12305. That is all right. I am talking about the professional scrutiny of the designs?—I know very little about that.

12306. Who is the final referee?—You mean professionally?

12307. I ask you, is the Chief Engineer the final referee as representing Government?—I do not know; I have nothing to do with it.

12308. Could you kindly give me a map of this Presidency showing the Government waste lands marked in distinctive colours?—Yes.

12309. *The Chairman:* I think you estimated the zamindari area at one-third of the total; did you not?—Yes.

12310. I find from the *Statistical Atlas* of 1924 that the total square mileage of the Presidency is 142,255, that of the Agency districts 19,287, giving 122,968, while that of the zamindari districts is estimated at 21,962, or about one-sixth of the total area less the Agency districts. Would you be prepared to correct that on those figures?—Yes, but part of the Agency is zamindari.

12311. That could not have the effect of making your original answer correct, could it?—Probably not. Including the Agency tracts the permanently settled area is a little less than one-third of the total: excluding the Agency tracts it is about one-fifth.

12312. Are the productive irrigation schemes yielding a net revenue?—Yes; a scheme is classed as productive only if it yields a net revenue.

12313. I understood from you that it was productive, if it yielded the charges on the debt by which it was constructed; must it yield a net revenue as well?—No; if it does not involve Government in any recurring expenditure, it is productive.

12314. I am asking you now whether any or all of your productive schemes do yield a margin over and above the service of the debt?—Some of them yield a large margin over and above the service of the debt.

12315. So that, if you regarded irrigation schemes, productive and non-productive, as a whole you might be able to finance certain so-called non-productive schemes from the margin of the net revenue yielded by the productive schemes?—If we had a separate budget for irrigation, if irrigation were kept separate, as Railways are now, then we should.

12316. Have you ever considered the advisability of that course?—I doubt if it is practicable.

12317. On what ground?—The balance is already earmarked for other services.

12318. Do you earmark particular funds for particular services?—No, but it goes into the general balance from which other services are met.

12319. I see the difficulty from the Treasury angle well enough?—That is the difficulty.

12320. But I am asking you whether you have ever considered the advisability on the ground of public advantage of making a change in that respect, and you tell me that you have not so considered it?—I have not.

12321. Do not answer this if it is too technical a question, but do you happen to know whether in non-productive schemes the water available is taken up each year by the cultivators in the area under command regardless of the season, or is the demand fluctuating according to the season?—There is one large canal, the Kurnool-Caddapah canal, where the demand is much greater in seasons of short rainfall; in normal seasons the demand is not great.

12322. So that the demand there fluctuates?—Yes, very greatly.

12323. And to the extent by which that demand fluctuates, the scheme financially is more or less unproductive?—Yes, in some years.

12324. In some years it is less non-productive than in others?—Yes.

12325. Have you ever considered the possibility of encouraging the reclamation of so-called non-culturable areas by offering these areas out to speculators on favourable terms?—They can get them free at present.

12326. They can get them free?—Practically; most of that waste land is granted free, only subject to payment of assessment.

12327. Would it be open to ventures in that direction to irrigate the land?—Yes, if they could find the water.

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12328. Would it be possible for Government to provide the water under existing circumstances, without prejudice to existing cultivation? Could that be done?—If that were so, there would be plenty of demand for the land.

12329. In other words, you do not think that there is any land under command of irrigation which is unculturable?—If you mean uncultivated land, there would be a very great demand for any land which is commanded by irrigation, if it were waste.

12330. On quite a different question, I observe (from the note on "Taccavi Loans" provided some time ago for the Commission by your department) that an allocation of, I think, Rs. 1,000 is set aside for loans on account of seeds. "The maximum amount which may be granted for the purchase of seed grains is Rs. 1,000." That is to each borrower?—Yes.

12331. When loans for the purchase of seed are advanced, is any attempt made to persuade the borrower and the buyer of the seed to buy the improved varieties recommended by the Agricultural Department?—I do not know.

12332. Do you think it might be an opportunity to put the cultivators into touch with the department?—I think so.

12333. *Sir Henry Lawrence:* I understood you to hold the view that emigration does assist the emigrant to improve his condition in life?—Yes, he gets good wages in Burma, I believe.

12334. Is there any organisation to assist an emigrant to find a place where his labour will be appreciated?—There are a lot of private organisations; there are a good number of so called contractors, at least there were in Ganjam when I was Collector there, who arranged passages for the emigrants, to Rangoon chiefly.

12335. There is no Government organisation?—I do not think there is any for that particular emigration; of course it refers to emigration to a part of British India.

12336. Would expenditure for that purpose meet with the approval of the Legislative Council?—It does not seem to be necessary.

12337. There is no desire on the part of landlords to keep their labour immobile, rather than to assist emigration?—I do not think the landlords object at all to that emigration, because it is seasonal. It is emigration in the slack season when there is little doing.

12338. To what emigration do they object?—I fancy they object more to emigration to the tea gardens in Ceylon, which is more or less permanent, so far as I know.

12339. Is that objection based on the fact that they lose their opportunity for cheap labour?—It tends to make labour more expensive, owing to the competition.

12340. Is that the basis of the objections to other emigration overseas?—I imagine that that is at the back of a good deal of the objection to the emigration that I have come in contact with.

12341. Is there any emigration to the West Indies, or British Guiana?—I have not had any experience of that; I have never served in a district where there was much emigration to the West Indies or British Guiana.

12342. From what part of the Presidency does that emigration to the West Indies, British Guiana and Fiji take place?—I am not quite certain of that; I think it is from the South of the Presidency.

12343. Your experience is in the North?—Yes.

12344. Ganjam?—Yes.

12345. No emigration takes place from there to the overseas settlements?—Practically, all the emigration in Ganjam was either to Burma or to Assam.

12346. So that you speak only from a very general knowledge when you say the objection is based on the desire to retain labour at cheap wages?—That is what I generally gathered.

(The witness withdrew.)

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APPENDIX I.

(1) Statement showing the number of pattas of various values held in the Madras Presidency for Fasli 1330 (1920-21).

Description.	Single patta.				Joint patta.				
	Number of pattas.	Extent of holdings Dry.	Extent of holdings Wet.	Assessment.	Number of pattas.	Number of share-holders.	Extent of holdings. Dry.	Extent of holdings. Wet.	Assessment.
1	2	3	4	5	6	7	8	9	10
		Acres.	Acres.	Rs.			Acres.	Acres.	Rs.
Pattas on which the payment is Re. 1 and less	508,620	290,719	19,423	3,12,815	377,491	1,246,576	176,582	11,836	2,00,277
Rs. 10 and less but over Re. 1	1,679,176	4,553,830	511,348	70,56,929	926,440	2,925,695	3,085,823	210,530	40,15,228
„ 30 „ „ „ „ Rs. 10	574,975	3,519,929	841,533	89,16,101	376,492	1,317,197	2,857,253	387,678	55,16,161
„ 50 „ „ „ „ „ 30	140,892	1,323,786	481,494	45,90,551	84,944	314,596	976,507	229,080	26,93,245
„ 100 „ „ „ „ „ 50	83,940	1,126,599	573,167	49,13,746	45,718	188,439	740,411	261,949	27,16,976
„ 250 „ „ „ „ „ 100	33,293	757,043	563,210	45,11,975	16,455	72,772	482,565	215,135	20,70,659
„ 500 „ „ „ „ „ 250	6,761	300,283	292,188	21,83,249	2,715	12,947	141,837	84,226	7,93,170
„ 1,000 „ „ „ „ „ 500	2,143	244,415	197,296	13,74,866	738	4,073	76,196	48,969	4,31,285
Over Rs. 1,000 . .	782	223,375	195,293	12,59,372	170	2,591	78,182	35,724	2,87,931
Total .	3,030,582	12,345,979	36,74,952	3,51,19,604	1,831,163	6,084,886	8,615,356	1,485,127	1,87,24,932

Total number of single and joint pattas . 4,861,745
Total assessment . . . . . Rs. 5,38,44,536

(2) *Statement showing the number of pattas of various values held in the Madras Presidency for Fasli 1335 (1925-26).*

Classification of Holdings.	Single Patta.				Joint Patta.				
	Number of pattas.	Extent of holdings.		Assessment.	Number of pattas.	Number of share-holders.	Extent of holdings.		Assessment.
		Dry.	Wet.				Dry.	Wet.	
		Acres.	Acres.	Rs.			Acres.	Acres.	Rs.
Pattas paying—									
Re. 1 and less	615,262	338,607	26,051	3,71,630	471,096	1,780,692	220,799	17,162	2,65,067
Rs. 10 and less but over Re. 1 .	1,890,396	4,861,046	553,049	77,68,341	1,046,605	3,382,964	3,315,074	268,960	44,77,139
„ 30 „ „ Rs. 10 .	617,098	3,563,563	860,852	94,66,741	370,458	1,308,109	2,703,033	433,323	57,37,531
„ 50 „ „ „ 30 .	144,721	1,346,680	489,830	49,52,134	77,533	299,910	919,119	247,539	26,21,425
„ 100 „ „ „ 50 .	83,230	1,152,873	574,439	52,11,883	39,339	158,472	658,289	238,268	24,49,674
„ 250 „ „ „ 100 .	32,835	769,963	561,147	46,28,286	13,460	63,818	426,192	205,295	18,58,620
„ 500 „ „ „ 250 .	7,042	333,989	292,702	22,56,905	2,402	12,049	133,336	83,512	7,24,413
„ 1,000 „ „ „ 500 .	2,404	214,760	203,413	14,92,572	588	3,966	63,797	43,900	3,75,597
Over Rs. 1,000	862	256,717	203,033	14,89,496	189	2,438	62,908	36,960	3,14,228
Total .	3,393,845	12,838,198	3,764,516	3,76,37,988	2,021,670	7,012,418	8,502,549	1,574,919	1,88,23,694

Total number of single and joint pattas . . 5,415,515

Total assessment . . . . . . Rs. 5,64,61,682

APPENDIX II.

Instructions issued by the Board of Revenue on some of the more important points for investigation by the Special Officer, Upper Bhavani Dry Project.

The first point to be considered in connection with the Upper Bhavani Dry Scheme is the question of localising the irrigable area under the project. In order to avoid waste in the use of the water the Board considers that the irrigable area should be localised. This work will require a Special Officer whose main object will be to select for irrigation compact blocks of land close to the distributaries. The total commanded area in round figures is 1,200,000 acres, and the irrigable area which represents the portion of the commanded area for the irrigation of which there is water is 160,000 acres—first crop (April to July) and 260,000 acres—second crop (August to November). It would probably be more economical to supply water in the second crop season also to most of the land that receives water for the first crop. On the other hand, from the point of view of benefiting a larger area it may be desirable to give water to different areas in the two seasons. Even if the latter of the two courses is preferred the irrigable area will be roughly only a little more than a third of the commanded area. At Coimbatore Mr. Ramalinga Chettiar, M.L.C., suggested that if the irrigable area were to be localised the taluks of Pollachi and Udamalpet should be omitted as they are better off in the matter of rainfall and irrigation than the rest of the commanded area. The present irrigable area in the Pollachi taluk is negligible and the northern half of Udamalpet taluk is almost as dry as any other part of the district. The least objectionable course seems to be to localise areas in each taluk proportionate to the commanded area, subject of course to the principle of making the most economical use possible of the water. All these questions will have to be investigated by the Special Officer. It may also be advisable to consult the Agricultural Department on the point whether it would be better to give water to the same lands for both crops or not.

2. The next point is whether an inclusive fee should be levied on the localised irrigable area. From the Settlement Commissioner's discussion with the ryots it appeared that the majority of them were not in favour of such a fee and that they would prefer a higher water rate and the Board considers that this would on the whole be more desirable. There would probably be difficulties in collecting the fee from all the ryots owning lands in the blocks which will be localised for irrigation. Even if the substantial sum of a crore of rupees (at Rs. 25 per acre, it would have to be more if first and second crop lands were not localised separately) were realised from the fee it would, on the basis of a seven per cent. return, reduce the water rate only to something over Rs. 9 an acre. It is however most unlikely that the fee would realise a crore, and the Board is satisfied that with a water rate of Rs. 11-4-0 or even more the demand for water will greatly exceed the supply. Another serious objection to the levy of the fee is that it would tie the hands of Government by conferring a permanent right on the ryots who paid the fee, whereas it is most desirable that Government should have a free hand in the matter of distribution of water.

3. The Board's proposal is that the irrigable area should be localised on the lines suggested in paragraph 1 above and registered as "irrigated dry." So long as a field is registered as "irrigated dry" it will pay the prescribed water rate whether it uses project water or not but in case of failure of supply remission of water rate would be given on much the same principles as remission on wet lands. Both the ryot and Government should have the option, at least for some years, of transferring "irrigated dry" to "dry" when the liability to pay water rate would cease. Government will of course not exercise the right unless when absolutely necessary, so that ryots will not ordinarily suffer from uncertainty as to the real value of the land.

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Legislation will be required to give effect to these proposals as at present Government have no power to charge water rate unless water is used. The ryots to whom the proposal was explained, were unanimous in accepting it. The fact is that the ryots are quite well aware that if Government find serious difficulties in the way of the Upper Bhavani project the Lower Bhavani project offers a safe and simple alternative, and they are willing to accept practically any conditions which the Government may think necessary to safeguard the interests of the general tax-payer.

There are certain obvious advantages both to Government and to the ryots in the above proposals. Power is left to Government to make changes which are found advisable in the localisation of the irrigable area. Inspection for revenue purposes is also reduced to a minimum as only the lands outside the blocks of "irrigated dry" will have to be inspected for purposes of water rate. The advantage to the ryot is that they get water in preference to other ryots who hold some 65 per cent. of the commanded area.

4. There is another matter in regard to which legislation will be necessary to safeguard the interests of Government. In 1906 the area protected by wells was some 150,000 acres; it is probably nearer 200,000 acres now. It will obviously be necessary to take precautions against the use of project water for these lands without payment. A possible remedy is legislation on the lines of the Irrigation Act in force in the Punjab (Northern India Canal and Drainage Act No. VIII of 1873). Rules under this Act provide that where part of a field is irrigated with canal water and part with water from a well the whole field will be treated as irrigated with canal water "unless a clearly distinguishable boundary demarcated by a ridge not less than half a foot high exists between the two portions." For the Upper Bhavani project the rule would have to be to the effect that in the case of a field protected by a well which lies within the limits of a block of irrigated dry all the crops cultivated will be treated as irrigated with canal water unless it is demarcated by a ridge in such a way as to prevent project water from irrigating it. It seems however to the Board that in practice the rule would be of no avail. It would not be difficult to pierce such a ridge; at any rate water will percolate through it. In view of the fact that the area is honeycombed with wells such a rule would paralyse the administration of the project and seriously affect the revenue under it. The best course seems to be to provide that lands classed as "irrigated dry" should pay the full water rate whether they are protected by wells or not. The ryot would not be unwilling to pay water rate on the whole of his holding even though a portion of it might be protected by a well or wells. A point to be considered in this connection is whether such lands should be charged a lower rate of water cess. The Board does not think that there is sufficient reason for giving them any concession for it is certain that the ryots will take project water by flow whenever it is available in preference to baling water from their wells. They will use their wells to supplement the project irrigation if they do not get it at the exact time when they want it. It seems to the Board that demarcation by ridges will be necessary for ordinary dry fields unprotected by wells which lie within the limits of a block of irrigated dry lands. The Board has not the slightest doubt that in this case and in the case of lands protected by wells the ryot will be only too glad to get water but the rule will prevent a litigious ryot from making himself a nuisance.

5. Another matter in which it will be necessary for Government to take power by legislation relates to what is called in the Punjab the division of fields into "kiaris." The object is to economise water by preventing wasteful application by ryots which may ordinarily amount to 25 per cent. of the supply. The effect of "kiaris" is to reduce to a minimum the time occupied in filling the fields to the required depth. The size of "kiaris" will depend on the discharge from the pipe or sluice. A copy of the Punjab Irrigation Circular which explains the procedure clearly is enclosed*. There is no reason why a similar rule should not be adopted in Coimbatore. It is in accordance

* Not printed.

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with the existing practice in irrigation from wells. The penalty in the Punjab for irrigation without preparing the land for irrigation by division into kiaris or compartments is a charge not exceeding half the water rate. Though the fields in Coimbatore are far more irregular in shape than in the Canal Colonies of the Punjab (where the survey is simplicity itself and the fields are square blocks of 10 acres) there will be no difficulty in enforcing such rules and they will undoubtedly make for economy in the use of the water.

6. Government desired to have an assurance that the revenue would be easily realisable without specially penalising wet cultivation. The Board is very doubtful if this is possible. Paddy cultivation is much more profitable to the ryot than dry crops, and the temptation to grow paddy will be irresistible unless a specially high rate—say Rs. 50 or Rs. 60 an acre—is charged for its cultivation. It is possible of course that with the development of irrigation in the country it may be found practicable in the not distant future to sell water by volume to the ryots. If that day comes all restrictions as to crops will automatically disappear. There are however, certain practical difficulties which must be faced. Mr. (now Sir Charles) Innes in paragraph 29 of his report printed in B. P. No. 140, dated the 6th May 1907 suggests that there will be a considerable area of lands on which it will be impossible to grow dry crops. The Board thinks he has possibly overestimated the extent of these lands, but it is obvious that paddy cultivation must be allowed on such lands and special provision can be made for this. The case of lands protected by wells on which it is now the practice to grow paddy is more difficult. There are apparently no statistics of the extent of paddy cultivation under wells, but there are wells in Coimbatore where at the end of the monsoon there is gravitation flow, and the Board would not be surprised if the extent of such paddy cultivation turned out to be considerable. It is a question which requires detailed investigation by the Special Officer.

7. The Board has made no attempt to prepare any draft of the legislation required to give effect to the suggestions above, as it would be waste of time to do so unless and until Government approve of the general lines proposed. The best method of overcoming the legal difficulties would be to enact a small Special Act for this project to confer on Government the necessary powers. It would be difficult to include in a general Irrigation Act the provisions necessary for the administration of large individual projects as such provisions might often conflict with the principles enunciated in the General Act. Further a Special Act would probably encounter less opposition in the Legislative Council.

8. There are certain other minor points in connection with the scheme to which the Board will briefly refer.

At Lyallpur Canal Colony the Executive Engineer (Major Hammond) showed the Commissioner of Land Revenue and Settlement an arrangement by which the distribution of water at the tail of the Rakh branch of the Lower Chenab Canal was automatically controlled, so that when the canal was running full each distributary received full supply; if the canal had a ⅔rds supply each distributary also had a ⅔rd supply, and so on. Thus the human equation (*alias* the P. W. D. lascar) was totally eliminated. Similar arrangements under the Bhavani Project would be of great advantage both to Government and to the ryot.

According to paragraph 7 of the Chief Engineer's report there is an extent of nearly 48,000 acres of waste land (columns 3+6 of the statement) commanded by the project. Assuming that 35 per cent. of this will fall within the localised irrigable area it will be available for sale and might fetch about Rs. 16·8 lakhs at Rs. 100 an acre. This however will have no material effect on the water rate. In this respect the project is a great contrast to most of the Punjab large projects. The Sutlej valley project, for example, is likely to cost about 20 crores, but there is such a large extent of waste land under it to be sold that with a total charge of about Rs. 6 per acre for land revenue and water rate a return of between 15 and 20 per cent. is anticipated.

N.B.—The Special Officer has also general instructions to report on all other relevant points which come to his notice.

Mr. N. Macmichael.

APPENDIX III.

Statement showing progress of Forest Panchayats.

		Sq. Miles.
Extent of ryots' forests according to Mr. Whitehead's classification		2,803
Extent that is likely to be classed eventually as ryots' forests and brought under panchayat management		3,800
Area under panchayats prior to the advent of the panchayat staff		444·7
Area for which panchayats were organised by the Forest Panchayat staff in	1923	152·2
	1924	318·1
	1925	73·6
	1926*	1,164·2 (up to end of September 1926.)
		2,153

* Staff strengthened.

Lease amount payable by panchayats formed up to the end of September 1926 . . . . Rs. 95,264

N.B.—The question of strengthening the staff further so as to complete the formation of panchayats by the end of next year is under consideration.

MI N. Macmichael.

APPENDIX IV.

Indebtedness of the ryots in typical villages as disclosed in some recent Resettlement Scheme Reports.

District.	Number of villages examined.	Amount borrowed on mortgages.	Amount of unsecured debt.	Number of ryots examined.	Number not in debt.	Percentage of ryots not in debt.	Origin of debt. Per centage. Purchase of land.	Improvement of land.	Purchase of livestock and agricultural implements.	Construction of houses.	Marriage ceremonies.	Litigation.	Ordinary family expenses.	Trade and speculation.	Discharge of debts of relations and friends.	Discharge of old debts.	Other causes.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Tanjore — Delta .	42	Rs. 4,04,095	Rs. 6,20,970	1,602	897	56	18½	...	*	1	20	8	42*	3	...	7	½	*Apparently includes (9) & (10).
Tanjore — Upland	4	62,735	27,519	208	74	36	27	...	*	...	10½	1½	29*	13		19	...	
Bellary and Anantapur (black soil taluks)	100	10,06,038	7,73,531	...	...		27	3	8	11	24	4	6	11	1	2	3	Blanks show that information is not available.
Bellary (red soil taluks) . .	104	7,71,558	8,62,205	...	...	...	23	7	22	3	21	3	6	10	..	3	2	
Anantapur (red soil taluks) .	37	4,36,581	4,96.201	...	...	...	16	13	17	2	17	2	17	10	..	6	...	
Kistna and Godavari— Delta . .	71	4,40,982	11,36,780	1,799	674	37	28	24 (9 and 10 together)		8	14	1	10	3	...	8	4	
Upland . .	8	39,060	46,648	131	52	40	18	29 (9 and 10 together)		6	7	2	9	1	...	24	4	

Mr. N. Macmichael

APPENDIX V.

Statement showing the amount of Taccavi Loans advanced and recovered.

Fasli year.	Amount of loans advanced during the year.	Amount payable during the year and the balance remaining unpaid out of sums which became due in previous years.	Amount recovered during the year.	Balance repayable during the year.
	Rs.	Rs.	Rs.	Rs.
1325	7,51.251	7,99,575	7,14,131	85,444
1326	7,44,282	8,05,761	7,16,983	88,778
1327	8,24,572	8,25,999	7,09,001	1,16,998
1328	10,39,362	9,29,289	7,50,343	1,78.946
1329	14,56,251	10,81,154	7,70,027	3,11,127
1330	16,27,589	13,43,367	8,89,607	4,53,760
1331	21,38,211	14,85,716	9,57,141	5,28,575
1332	14,81,127	17,81,782	12,76,227	5,05,555
1333	35,62,461	16,85,441	11,20,513	5,64,928
1334	37,19,663	25,25,943	18,93,852	6,32,091

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APPENDIX VI.

Statement of Applications for Taccavi Loans received and rejected.

Year.	Number of applications received.	Number of applications rejected.	Percentage of column (3) to column (2).
1)	(2)	(3)	(4)
1921-22	71,296	21,662	30·3
1922-23	30,603	9,746	31·8
1923-24	44,004	9,201	20·9
1924-25	91,016	30,038	33·0
1925-26	49,891	17,521	35·1

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APPENDIX VII.

		Percentage to area sown.
1	Total Area irrigated	27
2.	Area irrigated under Government canals $\frac{(38.7 \times 27)}{100}$.	10·5
3.	Area irrigated under other Government sources (tanks, springs, etc.), $\frac{(41.3 \times 27)}{100}$	11·1
4.	Area irrigated under wells $\frac{(17.3 \times 27)}{100}$ . . .	4·7
5.	Area irrigated under private canals $\frac{(2.7 \times 27)}{100}$.	0·7
		27·0

Mr. N. Macmichael.

Sir GEORGE PADDISON, I.C.S., C.S.I., K.B.E., Commissioner of Labour, Madras.

Written Memorand.m.

LABOUR AND ITS MOVEMENT.

Strength.—Cultivation in this Presidency supports as workers and dependants, 30,000,000 out of 43,000,000 inhabitants as enumerated in the census of 1921, or 7 out of every 10 persons. Of these, farm servants and field labourers number 3 out of every 10 as is shown in the following table:—

Class.	Total.	Men.	Women.	Dependants.
Farm servants . . .	2,927,459	961,911	630,055	1,335,493
Field labourers . . .	5,323,686	1,354,260	1,676,339	2,293,087
Total .	8,251,145	2,316,171	2,306,394	3,628,580

This gives only one labourer for every 4 acres of cultivated land including irrigated land in the Presidency. A very large number of persons, however, classed as cultivating owners and tenants are also labourers, but the exact number cannot be calculated. In a number of typical villages at the recent resettlement in Bellary and Anantapur districts, 28 per cent. of the farmers combined with their own job that of agricultural labourer. In Tanjore district, a typical delta district, there is a regular system of tenancy which is practically a wage contract, the landowner giving his tenants a share of the crop in lieu of the wages but advancing a considerable proportion of the cost of cultivation and often employing other labourers to help them in reaping and transplanting the crop. Often too, the smaller owners or tenants assist each other without any payment in times of urgency such as transplantation and harvest seasons.

The village workmen who chiefly affect the agriculturists are the blacksmith and the carpenter and the farm-labourer proper. The *panchangamdar* who predicts the weather and is paid by the farmers, can hardly be considered a labourer. The blacksmith and the carpenter belong to particular castes and their job is generally hereditary. Their pay is sometimes in the shape of a plot of land held free of assessment on condition of service and in addition (if the land is not enough to support him) a percentage of the crop given at harvest time calculated on the basis of so much for each plough. Sometimes a cash wage is given. These workers are generally well off.

The farm labourers proper are divided for the purposes of the wages census into ploughmen, sowers and transplanters, weeders, reapers and harvesters, and others. As a matter of fact, in this Presidency, except ploughmen whose special duty is to look after the cattle, these workmen are all the same persons. It is true that at the time of transplantation or harvesting, extra labour may be secured if possible. The sowing is frequently done by the farmer himself as it is a difficult task. If seed is broad-casted and even if a drill is used as each seed is dropped in by hand into the hopper, it requires care to see that the right amount of seed is used. The herdsman who looks after the cattle or goats is generally a small boy or an aged man. Transplantation of rice is generally done by women, reaping sometimes by both men and women, but often women are engaged in carrying the crop

to the stack or threshing-floor on their heads. Cotton-picking, tea and coffee plucking, and ground-nut picking are also done by both women and men.

Wages given in different districts vary a great deal. In the Agency tracts of Ganjam and Vizagapatam, the average for an ordinary unskilled labourer is only about As. 2 a day; similarly in the northern part of South Kanara, in Vizagapatam and on the Deccan plateaux which is mostly unirrigated land, wages are low. The higher wages are to be found in the delta tracts near large towns and large centres of industry, or near the hill stations. For example, in Tanjore, Trichinopoly and Madura (in the tracts irrigated by the Cauvery and the Periyar) As. 6 or over is generally paid; near Kodaikanal, Coonoor and Ootacamund, similar labourers get 8 annas; the wages in Saidapet taluk, close to Madras, are over 8 annas a day while in Conjeeveram and Madurantakam taluks in the same district but farther from Madras, it is just over 4 annas. Ploughmen get rather more than ordinary agricultural labourers except at such times of urgency as transplanting or reaping seasons when the occasional labourer also gets more than at other seasons. But it must be remembered that ploughmen, as a rule, take part in harvesting and reaping. All these figures must be taken with a certain amount of salt as very frequently wages are paid in grain and the exact rate at which it should be commuted it is not easy to estimate. Moreover, an agricultural labourer frequently gets a number of perquisites such as cloth, a pair of shoes, money for betel or tobacco and an annual sum in cash. The same persons will be paid at different times in cash and in grain. Without vouching for the absolute accuracy for the figures, it may be said that an ordinary labourer gets between 5 and 6 annas, ploughmen between 6 and 7 annas and those engaged in reaping and harvesting about 7 annas. As a rule, but not universally, women get less than men, in most cases about two-thirds of what the men get. In the last census the number of women employed in proportion to the men showed a reduction from 1,187 to 996 to every thousand men. This is a sign of increasing prosperity. Another distinction between classes of labourers is that between farm servants and occasional labourers. On the face of it, the farm servant has a better time of the two as he frequently gets one or two daily meals, and in bad seasons, is kept on at the expense of the farmer, whereas the daily labourer has to go to some other district in search of work or to migrate generally to Burma or Assam from the north of the Presidency, to Ceylon or Malaya States from the south, and from the West Coast to the plantations of tea and coffee on the Anaimalais, on the Nilgiris, in Mysore or in Coorg.

The most fortunate type of the farm servant is one whose caste approximates to that of his master and who ' lives in '. Such a man is often treated as one of the family and shares their fortunes in good and bad times. On the other hand, a large number of these farm servants, especially of the low castes, who have no access to their masters' houses, are frequently very badly off. They are given an advance on some special occasions such as a wedding, and nominally the loan is to be repaid by service. If the workman is invaluable the master takes care that this loan shall not be worked off, and this man is attached compulsorily to this master for life and sometimes also his sons inherit the debt after their father's death. If the farm is sold the farm servants and the debt are taken over. The only way of their keeping from this form of servitude is emigration.

After an enquiry by Mr. J. Gray, O.B.E., I.C.S., the present Registrar of Co-operative Societies, great efforts are being made by Government to change this state of affairs: co-operative credit societies are being formed specially for the low caste labourers, house-sites are being acquired for them, schools are being started, water-supply improved, in many cases a well is being dug for the first time where before they were dependent on water from irrigation channels or were waiting at the well open to higher castes for some one to come and draw water for them. Land is being assigned to them wherever available either in the form of allotments which is the usual method adopted

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or in larger blocks where colonies are being started worked generally on a co-operative basis. The position of these labourers is worse in the *mirasi* districts of Chingleput, South Arcot, Tanjore and Trichinopoly. In these districts a few high-caste persons called *mirasidars* claim, rightly or wrongly, to have a prior right over all the land in the village including unoccupied areas and including the house-sites of the labourers. It is in villages of this type that emigration is most frequent as the low-caste labourer has no chance of acquiring any land and is at the mercy of his master, being liable to be expelled from the only land available for the house-sites if he should offend him. Great efforts are being made to improve conditions in this respect also, house-sites are being acquired and money advanced by loans from Government through co-operative societies and though the landowners objected most strongly when this work was begun and sometimes refused to employ their own labourers for some time, they soon found that the labourer who has a house of his own is much less liable to run away, has more self-respect, has acquired a habit of thrift, has frequently, in order to repay his instalments of the loan, given up drinking and is a much more valuable asset to his master than he was when he had no hope of improvement.

Conditions of Life.—No statistics are available showing the hours of labour. It varies in different districts both as regards the time of starting and leaving work and the number of hours worked. In one district, the workers wait till the morning mists are cleared before starting, in another in the dry heat of the East Coast or the Deccan they start earlier to have a longer time off in the burning heat. The Madras labourer works long hours but works fairly leisurely. The whole family often set out together for the fields, the baby is strung from a branch of a tree watched by one of the elder children while the father and the mother are at work. Sometimes the mother arrives later than the rest of the family as she first sees to her household work. The mother will leave her work to give her child nourishment, and in the midst of the day they all foregather under the shade of the tree to rest and have their meal. On the whole, there is no articulate desire for any regulation of the hours of labour and it would be impossible to enforce such regulation even if it were insisted on. Similarly it would be impossible to insist on accident or sickness insurance or maternity benefits. The mother will not stay away long from her work after her child is born. Nature does not require it in the case of persons bred in the open air in a hot climate. A real danger is the ignorance of the midwives whose insanitary methods may cause danger both to mother and child. Great efforts are being made to train these women, but the Indian labourer is very conservative and often prefers the old ways. There is no regular weekly rest-day, but Hindu and Mahommedan festivals are frequent, and Mahommedans and Hindus in this Presidency attend them all.

Health and Sanitation.—Hookworm is almost universal and though it does not often kill, it largely increases the danger from other diseases, and reduces the efficiency of the labourers. Efforts are being made to stamp it out, but this is by no means easy owing to the habits of the ordinarily barefooted labourers. Of epidemics, plague, cholera and fevers are largely due to the insanitary surroundings. Here again, efforts are being made by lantern lectures and other propaganda to educate the labourers in more sanitary ways. Water-supplies are being improved, less congested house-sites are being acquired; on some of the plantations especially, improvements are being made in these directions. This question, however, is rather a matter for the Health Officers to deal with than a mere layman.

Recreation.—The ordinary labourer has not the time or the money for any elaborate form of recreation. His chief delights are a festival, a marriage ceremony, singing songs, or beating the tom-tom. The telling of stories is a source of constant delight. If money can be secured, a pilgrimage is sometimes undertaken to sacred places. There is also the toddy and the arrack shop, which sometimes absorb too much of the labourers' earnings.

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Scarcity, Famine and Unemployment.—The elaborate system of famine relief which has been organised by the Government of India and the Local Governments over a series of years will doubtless have been explained in detail by other and more experienced writers. The Government attempt to maintain the normal level of subsistence but not of comfort. In consequence, during these periods, migration to other and more favoured districts or to more distant parts increases. It is in the season of scarcity that the problem of unemployment becomes important. In ordinary years, there is no lack of employment among most of the labourers except in the hot weather when some of the labourers find it difficult to get continuous employment throughout the week.

Migration.—There is a normal movement of population every year from the poorer districts to the highly irrigated tracts of the deltas. The number who so move cannot be ascertained. But thousands move every year from Vizagapatam, from the uplands of Godavari, Kistna and Guntur to the lands watered by the Kistna and the Godavari. In some cases these people finding conditions favourable, settle down in the districts to which they have come. As however these tracts consist of almost an unbroken sea of irrigated rice-fields they crowd very often on mounds rising out of the waters and their congestion is a serious problem which has been dealt with by acquisition of better sites and raising the level of the land acquired. Wherever possible, land in the possession of Government or taluk boards by the side of roads or channels is being allotted free. Similarly there is an inflow of labour in transplanting and harvesting seasons in delta tracks of Tanjore, Trichinopoly and Madura. From the West Coast, large numbers go every year to the tea, coffee and rubber plantations on the Nilgiris, in Mysore and Coorg, from Salem to the coffee plantations on the Sheveroys; from Coimbatore they flock to the Anaimalais to the tea plantations recently started there; from Ramnad, Madura and Tinnevelly a very large number go annually across the borders to Travancore. They generally stay on these plantations from 10 months to a year and then return to their own villages. They are recruited by *maistris* who receive some commission and also receive some money for advances to the labourer which is repaid out of his wages. The hours of work on these estates is about 10 hours a day including an hour's rest at noon, but, generally speaking, the labourers are set a certain task which they may complete in their own time. If they do more than the task they are paid by weight according to the amount they have plucked. The men earn from 7 annas to 8 annas a day, women 5 annas and children 3 or 4 annas. In some cases the estate pays the expenses of the labourers' coming and returning to their villages. In the matter of educational facilities, medical attendance and the water-supply, they are better looked after than they are in the plains. What they dislike is the cold and the wet on the hills as compared with the warmer weather in the plains. In fact if they do not find conditions better they would not go as the Indian labourer is a great lover of his home. The chief migration in India itself is to Assam and Burma. This is different from the migration to Travancore, Mysore and Coorg mentioned above, as there the labourers go and return as a rule in a single year and if they do not like the conditions there, they are able to return without much difficulty. Assam and Burma need a long and expensive journey. In fact they are a good deal farther and more different from the conditions at home than is Ceylon. The total number recruited to Assam last year was 13,684 of which Ganjam and Vizagapatam contributed 9,000. Owing to the immense demand for labour in this and other tea growing areas consequent upon the rise in the price of tea, an effort to open up new districts in the Assam was pushed on too quickly at first and a number of labourers returned. This was due to the fact that the emigrants did not understand the conditions under which they were recruited of the places to which they were coming. The proper method of recruitment to which they have now returned is to send to each village a person who has worked for some time in the plantation and

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can explain to the people what the conditions are like and what they may expect.

No figures are available for the annual migration to Burma where the Madras labourer goes to work in the rice fields and in the rice-mills as the Burman is not a labourer by nature. Probably about 12,000 go every year. Most of them go from Ganjam, Vizagapatam and Godavari in the north of the Presidency. A certain number go from the south, Tanjore, Madura, Ramnad, Malabar and Tinnevelly.

With regard to emigration outside India, the assisted unskilled labourers who are almost entirely agricultural labourers can only at present go to Ceylon and Malaya. A few have recently also been sent to Mauritius and there is talk of re-opening emigration to British Guiana. For practical purposes, the only places outside India which affect this Presidency are Ceylon and Malaya. The boom in tea has enormously increased the demand for labour in Ceylon and similarly in Malaya the demand for work on the Singapore Docks and also the removal of the embargo on the export of rubber have very greatly increased emigration to that colony. Representatives of the Government of India are stationed in both these Colonies to look after the interests of the Indian labourers and considerable improvements in their conditions have recently been effected in both the Colonies. On an average, 90,000 persons a year went to Ceylon as agricultural coolies in the last five years. A very considerable number of them were persons who had been there before. To Malaya as many as 70,000 were sent last year. A greater part of the emigrants both to Ceylon and Malaya came from the Tamil districts on the East Coast. Trichinopoly, North Arcot, Madura, Tanjore and Salem also contributed a considerable number. Tinnevelly, considering its proximity to Ceylon, sent remarkably few.

On the whole, according to the latest Census report for the decade up to 1921, this Province suffered a net loss of a million and a half of labourers in excess of emigration over immigration. Since then there has been a steady increase every year in the number of emigrants. This of course necessarily means that the demand for those agricultural labourers who stayed behind increases and conditions of employment are also growing better. The labourers who return from Ceylon or Malaya with considerable savings and the wider idea of the world must necessarily increase the ambition of those who stay in their own villages. However unpleasant it may be to the farmer in India, on the whole the lot of the labourer is improved by this emigration so long as the conditions in the countries to which he emigrates are carefully watched and provision is made so that he can return if he wishes to do so.

Conclusion.—On the whole the lot of the agricultural labourer is not so bad as would appear to be from the low wages which he receives. His wants are few owing to the fact that as there is no cold weather he needs spend very little on his clothes. In times of scarcity he certainly suffers, but the alternative of migrating either to other parts of India or to Ceylon or Malaya give him the chance of improving his lot. Wages though very low show a continuous tendency to rise. Even the depressed classes whose lot is far worse are beginning to improve, through the action of Government and of a few, too few, social workers. And if these efforts are re-doubled, education is made universal, water-supply, sanitation and housing are taken even more vigorously in hand than they are at present, a great advance may come in the next ten years.

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Reply to the Questionnaire.

QUESTION 18.—(*a*) (*i*) There is not in my opinion any need for measures to attract labour to other districts. The planting industry where there is a shortage owing to the expansion of the tea industry has its own organised labour and recruiting department. The deltas, as I have said in my memorandum, are supplied from the surrounding districts. Something might be done and is being done to supply them with better house-sites.

(*ii*) Large tracts of cultivable land do not remain uncultivated for want of labour.

(*b*) There is not any shortage of labour in this Province.

(*c*) In some districts, especially the dry districts of the Deccan, there are considerable areas uncultivated—generally poor soils. Steps are being taken to assign these lands to the depressed classes who are agricultural labourers. As a rule, they will remain labourers and cultivate their lands in their spare time. They will have to be financed through co-operative societies who however only give short-term loans, Government loans for land improvement and agricultural loans under the various Acts.

Oral Evidence.

12347. *The Chairman:* Sir George Paddison, you are the Commissioner of Labour in this Presidency?—Yes.

12348. You have put in a note of the evidence which you wish to give before the Commission and in that note you have referred to a memorandum, prepared under your instructions, which is also in the hands of the Commission. Do you wish at this stage to make any statement of a general character?—The only thing I should like to say is that my experience of agricultural labour, apart from my experience as a district officer, is mainly concerned with the depressed classes who are the 'untouchables' as they are called and to some extent with criminal tribes.

12349. Now first in the reply to our Questionnaire, you say in answer to question 18, sub-section (*ii*) (*c*), "In some districts, especially the dry districts of the Deccan, there are considerable areas uncultivated, generally poor soils. Steps are being taken to assign these lands to the depressed classes who are agricultural labourers. As a rule, they will remain labourers and cultivate their lands in their spare time." I take it that whether land is or is not cultivated, or indeed is or is not culturable, does not depend upon some entirely stable condition or test; it is a question partly dependent on economic changes with regard to which cultivation of certain land becomes unprofitable, and it may be a question of the availability of some new system of cultivation which in more than one tract in the world has placed large areas of land in the region of profitable cultivation which, before that invention was available, had remained entirely uncultivable; so that there is no definite category in which you can put land as between cultivable and uncultivable, is there?—No. These lands I was speaking of, especially in Anantapur and Bellary districts, are going under ground-nut cultivation. A great many of them have become more valuable as the sandy dry tracts will grow ground-nut though it is difficult for them to grow any other profitable crop.

12350. That is purely a money crop?—Yes.

12351. How far has this experiment in settling the depressed classes on this particular class of land been successful?—In all 180,000 acres have been assigned, but that is on all classes of land, I think.

12352. All classes of uncultivated land?—All classes of land in the possession of Government, land that is owned by Government but which has not yet been taken up by other holders. Apart from that type of land, there is also disforested land which was formerly occupied by small scrub jungle but which has now been thrown open; I have been able to secure some of that for the depressed classes.

12353. Are most of these lands so situated that the depressed classes can cultivate them and at the same time earn a wage as agricultural labourers from owners of other lands?—Yes, as a general rule I should say they are.

12354. And without the support of wages, would it be possible for the settlers on these tracts to maintain themselves?—Yes, in some cases, especially I should say with the disafforested lands which, when once they are cleared, are sometimes much more valuable than the land which has been left by the ryots.

12355. Precisely. You say they will have to be financed through co-operative societies which, however, only give short-term loans?—I have been away for a year and a half and I am told they are now giving long-term loans.

12356. We shall probably hear about that from the witnesses who will speak more directly on co-operation. I was going to ask you whether, in that part of these lands where settlement has already taken place, short-term and even long-term credit is in fact provided by co-operative organisations?—In some cases it is. Of course it all

depends on the conditions. If we are getting a compact block it is very easy to form a co-operative society; but if there are odd little bits of land it becomes difficult. We have one interesting experiment in what are called *Lanka* lands, the islands in the Godavari and Kistna rivers, where these people take up these lands; these are extremely valuable lands and pay a high assessment which is levied on them through co-operative societies. They borrow money from the Kistna Bank and the Central Bank; but these are lands which are so naturally fertile that they do not require so much initial expense as the lands of more barren tracts.

12357. Rich alluvial soil?—Very rich soil indeed.

12358. You say they are taking them up. Who are? The depressed classes?—The depressed classes.

12359. How comes it that the more fortunate classes have not taken up these lands?—Owing to the fact that they are subject to erosion by the river or owing to more alluvium being deposited, they are only leased for short terms; in the old days they used to be leased by auction and a large number of them still are; but some of them have now been taken up at a rate fixed by the Government with reference to the average of the previous years. They are given to these people direct; they are not put up to auction because, if they were, these people would not have the chance of competing with their richer neighbours.

12360. That is part of a social policy carried out at the expense of the general tax-payer?—To some extent; not to a very large extent. I should think we are trying to get the economic rent.

12361. Then I did not understand your answer?—Sometimes in public auction the bidding becomes so keen that they go almost beyond the economic rent.

12362. *Sir Henry Lawrence:* How many thousands of acres are involved? —I could not tell you the exact figures; but it is not a very large area.

12363. 200,000 acres?—Nothing approaching that, not for the *Lanka* lands.

12364. 5,000 or 10,000?—Yes; that would be the utmost.

12365. *The Chairman:* Do you think your experiment in settling the depressed classes on uncultivable land has proceeded far enough for you to give us a firm opinion as to whether that experiment is likely to succeed?—No; I think I should like to see it carried on further to see whether it will be a success. In some cases it has succeeded and in others it is more difficult.

12366. When was it initiated?—About five years ago; I am not absolutely certain of the date.

12367. Have you formed any estimate as to what total population amongst the depressed classes you may be able to settle in this way?—No, I have not.

12368. I only wondered whether you could give the Commission any idea of the scope of the problem?—The difficulty is that in these places like Anantapur and Bellary the population is rather scanty at present and people probably would not want to migrate from a richer district to these districts. As a matter of fact the actual assignment of the lands is done through the Revenue officials and not through me.

12369. Do I understand from your answer then that the rate of settlement is somewhat retarded by the fact that in some cases there is no population contiguous to these districts available for settlement?—For the large area that is available, yes; there may be one village with perhaps a thousand acres or more and the number of agricultural labourers in that village would not be large enough to take it all up.

12370. Could any part of that section of the population which is in the habit of going overseas, to Burma, Assam, Malay, Ceylon, there to work

for a wage, be persuaded to settle on these lands in question?—I do not think so, in those districts. Some do go to Assam from Anantapur and Bellary as it is.

12371. They find that economically more attractive than settling on these relatively poor lands?—I think they do.

12372. Now may I turn to the memorandum which has been in the hands of the Commission for some time? I do not know whether you wish to say anything in amplification of this memorandum?—No.

12373. You give some very interesting figures. There are only one or two questions I want to ask you. I want you to give the Commission a picture of what happens when a cultivator migrates from district to district within the Presidency in order to work as an agricultural labourer. Does he move with his wife and his family?—I think invariably, yes.

12374. There is no leaving of the family behind?—Except when they go to tea gardens; even then they sometimes take their families, some of them.

12375. *Dr. Hyder:* Does that statement apply to the migration of labour into Burma?—No; as a rule they do not take their wives and children to Burma; they send over money from Burma by postal money-order. But you are talking of the people in this Presidency, I think?

12376. *The Chairman:* Yes, I was and Dr. Hyder was talking of Burma. I understand that as regards the Presidency, except in some cases where migration is to the plantations, they take their families. How about their housing when they get there?—That is a thing we are trying to improve at present; to give them better housing or rather better housing sites on which they can put up houses and then they probably will remain.

12377. Am I right in thinking that housing in the hill districts is even more important than it is in the plains owing to the heavier rains?—Yes.

12378. What does it cost, do you know, to erect a reasonably healthy dwelling in a hill area?—I do not know.

12379. Are labourers expected to provide themselves with houses or are houses provided in every case?—Houses are provided in every case in the hills.

12380. By the planters?—Yes.

12381. Do some labourers migrate to work as ryots in the hills?—No; very very few. That is to say, there may be Indian planters, but they are planters. They do not migrate to work on rice fields and so on.

12382. I was thinking of work on very small plots?—No; not in my experience.

12383. Is there any statutory obligation upon the employer of labour which has migrated to provide a sanitary dwelling for that labour?—They have to provide housing and sanitation in some districts where the Planters' Labour Act is in force.

12384. Are there planters in districts where that Act is not in force?—Yes; in Coimbatore that Act is not in force.

12385. Who decides?—The Government decide to what places it should apply. The Planters' Labour Act also gives certain facilities for realising advances in addition to certain duties in the way of housing, etc.

12386. I am not familiar with the terms of that Act, but no doubt we can acquire a copy; is there any inspection of dwellings under that Act?—Yes, not a very regular inspection of them, but they are inspected.

12387. Do you happen to know whether there is a parallel Act in Assam?—I do not know the terms of the Assam Act. Assam of course has a Labour Board

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whose Chairman is a man from the Madras Civil Service; he looks after the interests of the people there.

12388. But you are not familiar with the particulars?—I cannot tell you the exact terms of the Act. I may say also that as regards the Planters' Labour Act itself a Committee has been recently sitting, but has not yet reported, on the question of the revision or even the repeal of the Act.

12389. How long has the enquiry lasted?—I do not know when it began. I was away when it was put on.

12390. You mean within a few months?—Yes.

12391. There is one sentence on page 314 of your memorandum which seems to me a little obscure. You are talking about wages in cash and kind and you say: "The same persons will be paid at different times in cash and in grain." Does that mean at different times while working with one employer or different times when working with different employers?—At different times when working with one employer. During seeding time he might be paid at so much a day in cash and when working during harvest, for instance, at so much per day in grain.

12392. And not certain other perquisites?—Those perquisites will be given on certain days, certain festivals and that sort of thing.

12393. Is the general effect of this system to make it extremely difficult to assess the true wage of the agricultural labourer?—Very difficult indeed.

12394. You say "water-supply is being improved, less congested house sites are being acquired." That refers to ordinary ryotwari villages, does it? —Yes, chiefly in the delta villages.

12395. Who is supplying these communities with better water-supply?—Government.

12396. Is that a considered policy?—Yes.

12397. Will you tell us a little more about that?—What happens is this. I am referring now chiefly, but not entirely, to the depressed classes. They live in separate hamlets at some distance from the main village, and of course they have not, as a rule, access to the village well. They might have if the water-supply were a river, but where it is a well they almost certainly would not have access to it. As a matter of fact they might not have access to a village school though that is not necessarily so. In various other points like that they suffer from certain disabilities. I have District Labour Officers in some, but not in all, districts who send their men to each village in turn and send their report as to what are the needs of the village, namely, if there is a school whether the depressed classes are freely admitted and not merely nominally, if there is a water-supply whether it is possible for them to avail themselves of it. Then the District Labour Officer may report that the house-site is congested and suggest acquisition of land; or he may find that a well is needed: then Government funds are supplied to give them these wells; perhaps a school might be provided, or a pathway to the main road or burial ground; all those sorts of amenities are being supplied wherever necessary. The house-sites as a rule are paid for by the people themselves by instalments. Water-supply, roadways and burial grounds are given as free grants from Government at the expense of the general tax-payer. The house-sites also in some districts, not in all, are given through a loan made to a co-operative society and the money is repaid through that co-operative society. Before we acquire any house-sites we demand a deposit of the total amount which is likely to be required. A certain proportion of it must be deposited; the rest is paid in instalments. So that we hope that by doing this we shall be able to give them some stake in the country and although at first the landholders object to it, in the end they find that these people are less likely to migrate and more likely to remain on the land than in their previous condition. They are more independent of the landlord or the landowner, but they are more likely to stay in the village.

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12398. Are these loans for house-sites provided through co-operative societies wherever co-operative societies exist? Is that the rule?—We should create co-operative societies for the purpose.

12399. It is a society for holding these sites, is it?—Yes, of course thrift societies might be combined with it. Perhaps until the co-operative society had been formed for some time they would not have enough capital to pay the instalments. But when they pay the instalments the money will be paid into the funds of the co-operative society, and when they have enough to pay the instalments of the cost of the house-sites we should acquire the land.

12400 How old is the oldest society created for the purpose in question? —Eight or nine years old, I think.

12401. Are the indications promising?—I think very promising indeed. Considering the low wages they get I have been astonished at the regularity with which they pay.

12402. Do you feel yourself, looking to the success which is being attained, that a sufficient effort is being made to extend this scheme?—Yes, I do because it only applies to certain districts. In those districts that I was referring to before in Anantapur and Bellary and the Deccan districts they have no great difficulty in getting house-sites. It is only in the congested deltaic tracts that they have difficulty.

12403. When you talk of dry areas do you include areas where well cultivation and well irrigation are in use?—Yes, I should.

12404. Where you decide for one reason or another not to set up co-operative organisations, how do you provide the means for creating these new village sites?—In some cases we take individual instalments and do not pay the money to the co-operative society; perhaps we want larger experience in that case.

12405. To go back for the moment to the co-operative experiment, are you working there through the Co-operative Department?—Yes. We have the benefit of the advice of the Head of the department and he lends us certain Inspectors to look after the work for the time being.

12406. But the capital placed at the disposal of these societies is shown in your own budget?—Yes, it is shown in my own budget.

12407. Now, so far we have been discussing the betterment of the position of the depressed classes; but I suppose that classes other than those depressed are receiving help and attention in the matter of improvement of water-supplies?—As a rule they have access to the village water-supply which is provided by the taluk and District Boards.

12408. Do you know whether the Health Officer is responsible for these matters in this Presidency? Are you satisfied with the water-supply of the normal village community?—I should not care to give an opinion on that matter but my own general impression is that the water-supply is very good; at least it is very much better than it is with the depressed classes.

12409. I suppose where the depressed classes are not provided with their own water-supply they are sometimes forced to get water from a local tank or any other source?—Yes, or perhaps if there is an irrigation well they would pay somebody for the right to draw water from there; or perhaps they would pay somebody to draw water from the common village well and pour it into their pots; or they may wait their turn until some kind person comes and does it for them.

12410. Talking about the incidence of hookworm, you say it is almost general?—I believe the proportion is extraordinarily high among persons who do not wear shoes.

12411. The organism enters the body through the foot, does it not?—Yes.

12412. You say that efforts are being made to stamp it out, but this is by no means easy owing to the habits of the bare-footed cultivators. Do those efforts come within the ambit of your department?—No, not at all.

12413. Perhaps you would rather not go into that. You are talking about the difficulty of housing these large aggregations of population that take place in the thickly populated rice districts at the season of the year when labour is most required?—Yes.

12414. You point out how they crowd on those natural eminences which give a certain degree of dryness?—Yes.

12415. Has the practice of building a dwelling house on piles ever been attempted in the Presidency?—I do not know it at all. They may have it in some hill places where they are afraid of wild beasts; it is very, very rare and practically does not exist to my knowledge.

12416. Has it ever occurred to you that it might be worth while making some experiments in that direction?—Then you would have to take land on the edge of the village and would encroach on the rice land.

12417. You mean there is no spare ground that is damp which is not covered by rice?—It would be covered by rice.

12418. You say, "Wherever possible, land in the possession of Government or Taluk Boards by the sides of roads or channels is being allotted free"?—Yes.

12419. My suggestion to you is that, having regard to the extreme dampness, it might be advantageous to the population if they were encouraged to build their houses on piles. That has never been attempted. has it?—No, but the main village is probably on a mound, you see.

12420. I am thinking now of these accessory dwellings which have to be provided in relation to the main question at issue, namely, migration of labour?—Yes.

12421. Would you care to express any opinion as to whether any experiment of that sort might be attempted?—I will look into it.

12422. Will timber be available?—Not as a rule.

12423. To revert for a moment to this migration overseas. First of all what is, broadly speaking, the arrangement? Is the agreement between the labourers and the agent who collects the labour and takes it over, or is it an agreement with the planter in Burma who is going to employ the labour? —In Burma they do not go to planters so much. In Ceylon and Malaya, which are regulated, the labourer comes over with no agreement; he is absolutely free to go to whom he will when he gets there. There is a common fund through which this emigration is done, and the labourers can go anywhere they like. In old days, in Ceylon, certainly, and, I think, in still older days in Malaya, the labourer received an advance before he left his village and until he had paid off that advance he could not go from one plantation to another. But now there is no such system; that has been completely abolished; when he goes to Ceylon or anywhere he is completely free to go where he will.

12424. So that he makes in fact no agreement at all?—None at all. Of course when he gets there he has to work somewhere, but he has no agreement.

12425. He puts down a deposit for his own fare?—No, that is provided from this common fund.

12426. All of it?—Practically all. They do not come under my ambit at all if they go over by what is called unassisted emigration.

12427. But the great majority of plantation labourers go over at the expense of this fund?—Of course, if there was a *Kangani* with him, (the *Kangani* being a man who is looking out for and recruiting for a particular

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estate), he would take him to that estate; but if on the way to that estate the labourer was to say " I am going to leave you and go off and work for someone else " he could do so; or he could still do so after he had worked in an estate for a week.

12428. Has the change you described been due to legislation or due to practice?—Due to legislation, I think.

12429. That applies to Malay States as well as to Ceylon?—Yes; it was done earlier in Malay than in Ceylon, I understand.

12430. I suppose, a certain quantity of labour is still going up to Victoria Point, that is to say Lower Burma rubber districts?—That would not come under me; I do not know about it because it is part of India; it is the same as going to Bombay.

12431. I rather gather from your memorandum that you think the general effect of this emigration of labour is to keep up the value of labour in the Presidency?—I should like to say that the Wages Census is going on now, and the figures are beginning to arrive. I have some of these figures, but they have not been checked. The results are so uncertain that I think they must be checked. But this I do see, that they show a fall in cash wages; whether it is a fall in real wages or not, I cannot say.

12432. A fall, since when?—Since five years ago. Of course prices were higher then.

12433. Probably you will let us have these figures later after they have been checked and arranged?—Yes, but it will take some time, I think. I will note it.

12434. I should like to ask you for your view on the comparative economic position of the small cultivator outside the rice areas; the small cultivator on the dry tracts on the one hand, and the agricultural labourer throughout the Presidency on the other. Do you think that the small cultivator is better or worse off than the agricultural labourer?—I should certainly say the small cultivator is economically better off and certainly he is a much happier man, because he has more to do; he is not so dependant on his employer; if the employer does not want him for a day, he can go and work on his bit of land.

12435. When was your census taken prior to 1921?—Census of Wages?

12436. Yes?—Five years previous to that. But I am sorry to say that in that census instead of giving the average wage they gave the wages as varying between two annas and four or five annas or something of that sort, so that it is extremely difficult to compare.

12437. Those were the limits, and you did not know the average?—We did not know whether it was 2½ or 3½; there was no comparison. I have now had a census taken, and get the averages instead, so that they can be compared

12438. Was the census that was made on the original plan of no help to anybody?—I think this other way is better; I can only say that.

12439. The original scheme gave no indication of the wages of the greater part of the labourers, did it?—I think they probably would cut out any extravagant isolated figure; for instance, if a carpenter drew Rs. 2, another Re. 1 and another As. 8, they would not say wages were from As. 8 to Rs. 2.

12440. Perhaps you could let us have those figures?—My successor will give them to you; I am going to South Africa on Monday.

12441. Your office will do that. Have you had any indication that the rise in the wages of agricultural labour between 1916 and 1921 (which I presume occurred) had the effect of turning a certain number of small cultivators into agricultural labourers?—No; I cannot give any indication.

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12442. Was there a substantial increase in the wages of agricultural labour between 1916 and 1921?—It is very difficult for me to say; because in 1916 they had only the figures between two annas and four annas, as I was saying: they did not give the average; they gave limits and I find it impossible to make a comparison.

12443. But you do not see any indications yourself that there has been a diminution in the number of small cultivators and an increase in the number of agricultural labourers?—No; I do not think so, but I think the census of 1921 will give you the number that was put in as field labourers. That will give the comparative proportion.

12444 There has been an increase in population; otherwise that would be a true comparison?—It will simply give the percentage of the population in old days.

12445. Percentage?—Yes; that was my idea.

12446. *The Raja of Parlakimedi:* Your jurisdiction does not extend as far as the Agency tracts, does it?—I have not any Labour Officer at present there, so I cannot say that any intensive work is going on there.

12447. What is the difficulty in having an officer there? Do you mean to have one?—It is purely a financial difficulty.

12448. Has it come to your notice that want of labour is being felt in certain tracts of the Agency in Ganjam?—Shortage of labour?

12449. Yes, because of this emigration to Assam?—I do not know what the effect of it was at all. Mr. Macmichael would have known better than I do.

12450. Have you tried to introduce among these labourers co-operative organisations? In the absence of these co-operative societies, when they want money at certain times, they are obliged to go to the professional moneylenders and borrow at a most exorbitant rate of interest. If somebody will take up the work of organising co-operative societies among them which will help them to sell their produce collectively and also create a banking habit among them, it will be saving them from a great deal of loss?—Yes. We have some thrift societies. As regards selling and purchasing, these labourers have not much to sell or purchase.

12451. You have not tried to tackle the question of the Agency tracts?—No; I have not as yet touched the Agency tracts.

12452. *Sir James MacKenna:* I find rather striking figures on page 317 of your memoradum. You say that no figures are available for the annual emigration to Burma, and add "Probably about 12,000 go every year." You mean every week?—I got that from some report. That is not my figure.

12453. We in Burma calculated the migration at about a quarter of a million?—It may be 12,000 a month.

12454. Probably 12,000 a week?—That figure certainly did not come from my department; I took it from some other source.

12455. From the evidence you gave to the Chairman I gather that the primary function of the Commissioner of Labour is the settlement of the depressed classes in agricultural areas; is that correct?—No; I should say that is mostly done by the Revenue Department in assigning lands to them. His chief object is to give them water-supply, schools, roads, burial grounds, dispensaries, and things of that sort.

12456. You know, we have been struggling with this Labour Department since the League of Nations pressed its importance upon us. Most of us have had academic inquiries into the cost of living and family budgets?—No; we have not done much in that way.

12457. So that your work has a most practical bearing on agriculture; what you are doing is the alleviation of the condition of the depressed classes

who are settled by the Revenue Department?—It is still more; we have to look after all those who continue as agricultural labourers.

12458 You are not wasting your time on academic discussions?—I have not the staff. I have to do with factories, emigration, the Workmen's Compensation Act and so on, and I have not the staff.

12459. Mr. Macmichael gave evidence this morning that the migration from the Agency tracts, which he knows very well, was after the harvest. When is the harvesting season in the Agency?—About December.

The Raja of Parlakimedi: The end of December. The migration is not entirely from the Agency tracts; it is also from the plain tracts.

12460. *Sir James MacKenna:* They come across to Burma to work in the rice fields?—I believe so.

12461. That of course gives a considerable increase in the wealth of Madras, but at the expense of Burma?—Yes.

12462 Did you hear about a Bill in Burma known as the Black Bill, last year?—No; I was away from India last year; I was away for two years.

12463. *Professor Gangulee:* I desire to ask you one or two questions about the settlement work you are doing. When you settle agricultural labourers, what area of land do you give them?—I think three or four acres is the ideal for those going to remain as labourers, because there is practically no irrigated land to be assigned; it is all dry land.

12464. In the dry tracts have you any definite areas for particular localities? Do you try to find out what could possibly be called an economic holding for a particular tract?—No, we do very little in that way, because this again is done by the Revenue Department, not by us.

12465. The allotment is done by the Revenue Department?—Yes. The idea is that the labour supply should not be depleted, that they should be working labourers with land to fall back upon. Of course, when we start a colony on a disafforested area we should try and give an economic holding.

12466. That allotment is done by the Revenue Department, on your recommendation, independently of your office?—Yes. Sometimes my Labour Officer, if there were one in the district, might help in distributing it, finding the people, and perhaps getting a co-operative society to finance it.

12467. Who is the guiding spirit in settling these labourers on the land? For instance, if they want good seed, manures and things of that sort, to which agency would they go? In actually settling these labourers on the land, they do require some assistance by way of manure or seed? What agencies can they fall back upon to supply them with those requirements?—They get that from their employers generally, the caste ryots.

12468. There is no official agency working in that direction?—No.

12469. You say that co-operative credit societies are being formed specially for the low caste labourers; have they begun the joint cultivation system?—If you have compact areas, my own idea is, as I was telling the Chairman, that it is better you have a co-operative society which makes itself responsible for the assessment, or a loan may be obtained to finance them, but each patch of land must be run by the man himself, so long as he pays up his share to the co-operative society; that is what I aim at.

12470. Do you encourage spare-time occupations in these areas?—I do not think we have done much in that way.

The Chairman: If an agricultural labourer is provided with a piece of land, tilling that land becomes his spare-time occupation.

12471. *Professor Gangulee:* Is there any office watching the progress of these settlements, keeping accurate data of their progress, and so on?—Not if it is simply a matter of assigning land by the Revenue Department. If you had a co-operative society specially for these people, that would be

watched by the district officer, who would report on it, or, if the loan were assigned to a co-operative society, they would keep an eye on it.

12472. The position, then, is that you simply point out to these agricultural labourers a piece of land, and let them do what they please?—Yes. Up till now it has been very difficult for an agricultural labourer who belonged to the depressed classes to get any land; that was the object of this scheme, and considerable areas of these lands have been reserved specially for them, so that they have a prior claim to that land, and it enables them to get these lands; but once they have got them, as a rule, they look after themselves.

12473. Do you know if any assistance is being given to the depressed class settlers by the Department of Agriculture?—I do not think so; but occasionally we would take the advice of the Agricultural Department; for example in the case of the disafforested land I would ask the Agricultural Department for their advice, but not otherwise.

12474. Do you travel in the Presidency in connection with your work as Labour Commissioner?—Yes, I do, especially in the districts where we have a Labour Officer.

12475. In this memorandum you mention in several places "labourers" and "farm labourers proper"; then you say "farm servants" and "field labourers"; these designations of labour are rather vague; who are the actual labourers?—The farm servant is the man who is attached to one master and gets a monthly, not a daily, wage; the field labourers are persons ~~who are~~ employed by the day; they may work for anybody.

12476. Further down you say 'the farm labourer proper'; who is he?—There are the village workmen like blacksmiths, carpenters, etc., as opposed to the man who works directly at agriculture.

12477. Most of these labourers, as I understand it, have no land?—No, most of these labourers have no land. When I say 'most of these labourers' I do not include the carpenter and the blacksmith; they might have an *inam*.

12478. Have you, in your Labour Office, collected any data showing the labourer's family budget?—No, I do not think I have any.

12479. You have given here a list of wages; you say the 'ordinary unskilled labourer' gets 2 annas a day; what do you mean by ordinary?—I mean an ordinary man looking after cattle or that sort of person, as opposed to a specialist.

12480. Further down you refer to the 'repayment of loan by service' in the case of the low caste farm servants. Do you agree that the condition you describe here is almost a condition of slavery?—It was so; I hope we can get rid of it; there has been a very great improvement in that direction since Mr. Gray wrote his report; that part of my department which deals with them is largely founded upon the conditions disclosed by that report.

12481. Is it possible to get some data from your office with regard to the labourer's diet?—No, I do not think I can give that information.

12482. Could you not give us any information as to what he eats and so on?—With regard to the amount he eats?

12483. What he eats and the amount, both quality and quantity?—No.

12484. On page 315 you say: "There is also the toddy and the arrack shop, which sometimes absorb too much of the labourer's earnings." Has this habit of drink been increasing? What is the tendency with regard to the sale of liquor?—I suppose the Excise officials would be able to tell you that. The depressed classes were neglected, and nobody went near them; they did not know any other way of spending their money. Now, certainly in some villages, there has been a great improvement in that direction, be-

cause of thrift; they have begun, through their saving, to repay the loans for general purposes, or pay for their house-sites and things of that sort.

12485. I suggest that perhaps the very presence of the toddy shop may be an obstacle to their cultivation of the habit of thrift?—Yes, if they drink to excess, certainly.

12486 I understand you have prohibited the sale of liquor in some dry areas; is that right?—Is that so? I do not know; probably that is the case since I have been away.

12487. I understand that the Excise Department will not grant any licenses in dry areas?—You mean in unirrigated areas?

12488. In dry tracts, where the population is mostly poor?—I have never heard of that discretion.

12489. I gathered it from a friend; I do not know whether it is correct. With regard to Emigration, do you consider that the Indian Emigration Act of 1922 has improved the condition of emigration?—Yes.

12490. The Act has succeeded in checking improper methods of recruitment?—I think so. Very often (it was not intentional perhaps), people were induced to go to distant places like British Guiana and Fiji, where they had no idea what the conditions were going to be like. Now, because of the fact that every emigrant has to appear and get a certificate from the village officer before he can leave that he leaves willingly, everybody in the village knows that he is going; that, I think, has had a certain effect; I do not say an exceedingly good effect, but it has had a certain effect.

12491. You say "if education is made universal"; have you any definite idea about the introduction of education among these labourers?—Making it compulsory, you mean?

12492. You say "if these efforts are redoubled"; are you referring to compulsory education?—Yes.

12493. Do you think that compulsory education would be necessary, or would help to improve the condition of the labourers?—I think it would; I think it would make them self-respecting; with many people, the depressed classes especially, I think, they would not feel they were being kept under.

12494. Do you think the time has come to do that?—It is very difficult, but it is being tried, I understand, in certain parts.

12495. *Sir Henry Lawrence:* What is being tried?—Compulsory education; it is being tried in certain of the towns; I am not talking of the rural areas. Of course, it cannot be brought in suddenly, because we have not got the necessary school accommodation and things like that; but they are working up to it in some places.

12496. *Mr. Calvert:* In your memorandum you give a total for farm servants and labourers of about 8 millions,. and I see that about 8 millions are also included in the tenant class; is there any sharp division between these two classes?—Very little.

12497. They merge one into the other?—That is what I think. For instance, these persons I am speaking of, people who have got small patches of land, would be proud to describe themselves as landowners in the next settlement if they had a *patta*, but practically speaking they would remain labourers.

12498. I see large numbers are paying one rupee and less; are these mostly labourers?—Yes, I think so.

12499. Is there any tendency for the artisan class, the blacksmith and leather worker, to take to cultivation, or *vice versa*?—They generally have a little land; in the old-fashioned villages they have a piece of land allotted to them, but I do not think they are ceasing to be blacksmiths and becoming cultivators.

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12500. Take the ordinary village; has not a *pattadar* rather a higher social status than a blacksmith?—I do not think so; I think it varies very much.

12501. They do not try to take to cultivation just to raise their social status?—In some cases, perhaps; but they would find it difficult, because some of the cultivating classes consider themselves higher; I think it would go upon castes and not upon social status.

12502. Has any attempt been made in this Presidency to estimate the supplementals to agricultural labour in terms of money?—They tried for a time to convert those into money, at the time of the wages census, but it is very difficult, I think.

12503. It is possible to make out a long list of supplementals, is it not?—Yes, tobacco, betel, and things of that sort.

12504. Do the depressed classes get a free house-site?—Yes, as a rule.

12505. And free mud for the bricks for their houses?—You mean from the employers?

12506. From the village lands?—If there is any available, they would not pay for it.

12507. Would they get the material for the roofs of their houses free?—There again, they might have to pay; it will depend on the locality.

12508. Do they get free firewood from the village common?—In some cases they will, but in the delta tract, where it is all rice, they would get practically nothing.

12509. Would they find free grazing for their donkey or cow?—In some places, yes; round here in Madras, if you went out 20 miles in one direction, you would find large agricultural grazing grounds or *porambokes*, some of which I have tried to get for the depressed classes. There are large areas of grazing lands or *porambokes* which are free.

12510. Is there any practice whereby during harvest time these labourers are allowed to carry home a headload of the harvest as well as their payment?—As a rule I think they would be paid in addition to the headload, but I am not quite sure about that; I would not like to say anything about it.

12511. Has anyone ever tried to examine what happens to the little bit of the harvest given as charity? Does that go to the agricultural labourer or his children?—I do not know.

12512. But the gleanings after the harvest are given to the labourer's children and womenfolk?—Yes.

12513. The actual real wages of the agricultural labourer are probably considerable and certainly incalculable?—It is extremely difficult to calculate the total amount.

12514. The mere anna per day criterion does not mean very much?—No.

12515. You say on page 314 that the reduction in the proportion of women labourers is a sign of increasing prosperity?—Yes.

12516. You would say that of England?—Yes, I would. In my young days all women used to go working in the villages; now they do not. I think that is a sign of increasing prosperity.

12517. Is the fact that the womenfolk work in the fields here a sign of low social status?—I do not think so. I am not talking of social status. It would not be a necessity for them to go out; that is the point.

12518. Is it not the point that a man tries to raise his social status by withdrawing his women from labour in public?—Yes.

12519. Is it not necessarily a sign of increasing prosperity?—I think it would probably be a sign of increasing prosperity in England if he could really afford it.

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12520. Has not increased prosperity gone hand in hand with increasing female labour?—In factories you mean?

12521. Yes, factories, shops, post offices and offices of all kinds?—I do not think agricultural labourers' wives go to these fashionable employments. I should say the comparison would be with Lancashire or some place like that, where women go and work in the factories. If the men are well-off, their wives will sit at home and not go into the factories, that is my opinion.

12522. There is no idea of the daughters going to work for the sake of being independent?—No; I have never heard of that.

12523. On this question of a sort of permanent debt system, is that also found among the village artisan classes like weavers?—I do not know; I have no experience about that, but I should not think so.

12524. May I ask you what is the remedy you are applying?—I think the co-operative societies and the work which is being done to help these people are improving their position. There have been one or two cases in which the man has been turned out of the society.

12525. Are these depressed class people for whom you are trying to get small plots of land given any legal protection against attachment of their property for debt?—When we give land to a man of the depressed classes, we make provision that he should not alienate it except to Government or to co-operate societies or to a member of his own class. That is done in order to protect him in that land. The *sowcar* might lend him money on that land but he could not foreclose on the land.

12526. If you give him land, you do increase his credit?—Yes.

12527. And therefore he is more liable to run into debt?—That is true.

12528. But you have no special provision to protect his immovable property from attachment for that?—No, none.

12529. You recollect that the Fiscal Commission reported that one of the reasons why you had not got labour to move from villages to towns was the lack of housing accommodation in towns. Does that hold good for the Madras Presidency?—It is not nearly so bad as in Bombay; Madras has larger areas. I do not mean to say there is no housing problem in Madras, but it is nothing like so appalling as in Bombay.

12530. Is there not a complaint among the industrialists here of shortage of labour?—No, I do not think so.

12531. Such mills as you have have enough labour?—Yes.

12532. Then the Fiscal Commission also say that one of the special causes preventing the agricultural population from going into industries is the conservatism shown in the reluctance to adopt a life of industrial labour. Does that apply to Madras, to general conditions of life of industrial labour?—I have seen that a man would want larger wages to do industrial labour. He would much prefer, even if he gets a small wage, to work on the land rather than in a mill. But I do not know whether it prevents his going into a mill, because he gets more wages there.

12533. You have heard, of course, that certain people advocate industrialism as a remedy for the surplus labour power on the land, and the Fiscal Commission puts forward these two objections, shortage of housing accommodation in industrial centres and a general reluctance to adopt industrial life. Are there any other factors which retard rural life from coming into industrial pursuits?—No, except they like living at home; they like to sit there.

12534. Is the industrial labour here of a seasonal type? Does it go there when there is no crop and come back again when the agriculture season is over?—To some extent; but not to such a large extent as in Bombay, because here persons living in Madras or near Madras might work on

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the land sometimes and then go and work in the mill. A good many of them have houses in villages near by.

12535. I understand that there is a little difficulty in Bihar coal mines; they work for a short time and go to the fields again?—They do. A certain amount of what they call absenteeism may be due to their going back to the land. But they are never absent here for such a long time as they are in Bombay, because the surroundings of Madras are so much more rural.

12536. On page 316, on this question of unemployment, you say that in the hot weather the labourers find it difficult to get continuous employment throughout the week. Is there any hope that they could be organised to work for the improvement of their own surroundings?—In what way?

12537. Village roads, village sanitation, better water-supply and so on, spending their labour on their own improvement?—They do to some extent. Sometimes when we are digging a well, they will do the digging of the pit themselves.

12538. But you require organisation?—Yes, and with their wages you cannot expect them to do much for nothing.

12539. *Mr. Kamat:* When was the Labour Department brought into existence in this Presidency?—In 1919-20, I think.

12540. And since then no official enquiry into agricultural wages has been held?—We have only this quinquennial wages census. It is the only thing we have, a cash wages census and an attempt to convert grain wages into cash, but it is not a real wages census.

12541. What I am talking about is perhaps a more comprehensive enquiry of the type held in the Bombay Presidency in 1924?—I have seen that report; but we have nothing of that sort. We are much poorer in Madras than they are in Bombay and we have no staff.

12542. Is that the only explanation?—That is the reason.

12543. But have you collected no official data about such important matters concerning agricultural labourers and others and is it not a great handicap to the steps to be taken towards the improvement of agricultural labourers?—With our limited amount of money, we can spend every penny on work which we know will be useful. If we had a larger amount we might then make an investigation as to how we could spend more money; but at present, with the money we have, all we can do is to dig wells and make pathways and that sort of thing.

12544. Is there any tendency in this Presidency for labour to move from villages towards urban centres?—Not nearly so much as in some other parts of India, because there are so few industries. I think there is a slight indication from the census figures. I think about 70 odd per cent depend on the land.

12545. That fact hardly helps us?—I mean a slightly smaller percentage depend on land than in the previous census, very slightly smaller.

12546. Have you noticed any tendency for the small agriculturists to become agricultural labourers? Is there any percentage which you can indicate showing that the class of labourers has gone up or has gone down proportionately?—I was suggesting to the Chairman that these would be found in the Census Report, under landowners, tenants and farm labourers. The figures are there, but they must be taken with a grain of salt; not that I mean that the figures are wrong, but socially the position of a tenant or a landowner is so much higher that people are inclined to put themselves down as such when for practical purposes they are agricultural labourers.

12547. Have you got in your office figures showing the cost of living during the War and the cost of living now for the agriculturists?—No.

12548. Even that takes money to find out?—Certainly it does; my clerks are all overworked.

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12549. Do you notice a tendency for the agricultural labourer at the present day to work a smaller number of hours than perhaps he did ten years ago?—I have no reason to think so.

12550. In this Presidency he has not taken the law into his own hands and he has not curtailed his hours of work?—I should say not.

12551. There is no such tendency?—I do not know of any such tendency.

12552. And during certain seasons of the year, do you notice any tendency for the employer to be at the mercy of the labourer rather than the labourer at the mercy of the employer?—No.

12553. There is no such phenomenon?—Do you mean to say in the harvest season, for instance?

12554. Yes?—That is so, I should say; but certainly I think you put it much too strongly if you say that the employer is at the mercy of the labourer. I do not think so.

12555. With regard to this process of emigration overseas that is going on, do you think the emigrants improve their position by going overseas?—I think they do. That is one special reason why they do emigrate. The Madras labourer is such a home-lover that he would not go unless he knew his position would improve. He may of course be deluded into going by wrong impressions of conditions, but he can always write to somebody from the village who knows the conditions and tells him. He always asks before he goes.

12556. Can you tell me whether the betterment of wages is the same thing with the labourer as the raising of the standard of living?—I should say generally it was. If you give him more wages, as a rule his standard of living will rise.

12557. Have you noticed this from the observations you have made on the home life of labourers? Supposing a man instead of getting 8 annas gets 12 annas, does it mean that he raises his standard of living?—Not necessarily: he may spend it on toddy.

12558. Or he may work less?—Yes.

12559. I want your observation in this Presidency?—You speak of the agricultural labourer?

12560. Yes?—I do not know of any case in which it has been raised by 50 per cent.

12561. You do not think it is rising?—I do not think it has risen sufficiently to make any marked change of that sort obvious.

12562. From your experience as a Labour Commissioner would you think that even supposing the labourer earns more he would improve his standard of living without definite, deliberate and conscious effort being made to teach him better means of living? Does he know how to spend his increased earnings?—I do not know.

12563. Have you observed his home life sufficiently to draw any deductions as to whether, given increased power to earn, he knows how to live well, or is it necessary to make a conscious effort to teach him?—I do not think so. At present I do not know what form of better living you would suggest. Do you mean to say that he should have a better house?

12564. What I am suggesting is this. Unless you give him compulsory education he will not be able to understand for himself how to spend his increased earnings on clothes, house, education of children, etc.?—He might spend it mainly on his food.

12565. For this reason do you not think that compulsory education is necessary?—I am in favour of educating these people and we are making an advance in that direction.

12566. Do you agree that the standard of living can never rise automatically?—I think that a small rise in the standard of living would mean that he was less in debt and had more to eat.

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12567. That is the whole point I am driving at. The standard of living of an ordinary labourer or an agricultural labourer cannot automatically rise and some other means has to be tried, say compulsory education. Do you think it would automatically come?—It is so hypothetical; I do not know.

12568. It is not hypothetical; it is a matter of observation of the life of the people?—My observation of the life of the people is that there has not been such a rise as to enable me to express an opinion.

12569. *Sir Henry Lawrence:* Do I understand that your duties are confined to the depressed classes?—As far as labourers are concerned, yes: I have many other duties. In some places in the deltas I have been working for house-sites for caste labourers, *Padayachis*. They are not technically outcastes. That is not my main work.

12570. What is the budget for your department?—My budget last year was mostly for loans.

12571. To what extent are these operations for the depressed classes and to what for the criminal tribes?—I am afraid I cannot tell you.

12572. Can you put in figures?—For the depressed classes and criminal tribes separately?

12573. Yes?—Would you want, for instance, the criminal settlements included?

12574. Yes, what it would be for the criminal tribes. Do you deal with your criminal settlements under the jail budget?—No, it is in my own separate budget.

12575. Now what proportion of your total population do your depressed classes represent?—Well, it is about 1 in 6; 7 millions out of 42 millions, I think.

12576. So that you have quite a considerable proportion to deal with?—6 to 7 millions is quite a large number. I am looking after emigration, about 52 per cent of which is from the depressed classes.

12577. Would you like to tell us your budget?—8 lakhs are allotted to the Labour Department; 1·56 for free grants (that would be for pathways, burial grounds and things of that sort), 2,19,000 for education charges for the depressed classes, 4 lakhs for loans for the acquisition of houses, which we have to get back and of which we are getting back a large amount already.

12578. Where do the criminal tribes come in?—It was not mentioned separately here.

12579. Are they included in the 8 lakhs?—Yes.

12580. The net expenditure for 6 millions will be 4 lakhs?—Yes, that is so. I have great difficulty in getting that.

12581. You think you ought to be able to get a larger grant from the Government?—Yes, we always ask for a larger grant.

12582. You mentioned emigration. How does this emigration affect the economic position of your agricultural labourers and depressed classes? What proportion of the adult males of this class emigrate every year? Would you put it as high as 10 per cent?—I think the figures are here: 40,000 from Madras last year and from Negapatam 45,000. That means about 100,000 people went to the Malay States.

12583. For one year?—For last year; and for Ceylon about 75,000 under the Act and 50,000 not under the Act.

12584. Where does the labour come from?—According to the returns no less than 80 per cent come from Madras.

12585. For one year?—For last year.

12586. I have got some figures here which show 80,000 from Madras?—That is exact, I think. According to the returns no less than 80 per cent are from Madras.

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12587. Can you look up those figures and send them to us?—I was away when this was drawn up. 76,000 persons went to Ceylon last year as emigrants under the Act.

12588. Would you compare the figures with the Indian Year Book for the current year which gives the figures as 400,000 or 405,000 total emigration, out of which 80 per cent is from Madras?—I shall look up the figures and let you know later.

12589. Have you any information as to the estimated receipts in Madras by postal orders from overseas?—I have not.

12590. Could you get that?—I will get it. Do you want it by colonies?

12591. If you give the details so much the better. I just want to know how much your labourers get by emigration abroad as registered by this method. Have you not had any figures at all collected hitherto?—No, I do not remember having done so. I once got figures for Ganjam from Burma but I have not got those figures here.

12592. Is this emigration of sufficient importance to be detrimental to the agricultural interests?—I do not think so; though there are complaints, I do not know of any land which is not cultivated for want of labour.

12593. Where do the complaints come from?—There are complaints from the landowners in some of these deltaic tracts, I think.

12594. Is there a definite movement to try to check emigration in the interests of landowners?—I do not go so far as to say that. But if the question were raised, there probably would be objection to emigration. Probably many persons would object on the ground that too many had gone and that there was shortage of labour in consequence.

12595. Was there any movement on the part of your office to assist such emigration?—No.

12596. It has not reached that point?—We do not assist emigration. All I see to is that people do not go against their will. There is no assistance from my office. We do not assist emigration; we are responsible for seeing that they are not improperly recruited.

12597. It might be possible to reconcile the two; there might be a good opening somewhere, and you could induce people to go there?—You mean Malay, Ceylon, etc.?

12598. Yes?—You cannot assist emigration to any place, except Ceylon and Malay.

12599. Emigration to other places overseas has been stopped since when?—To British Guiana, Fiji and Mauritius since 1922, when the Emigration Act was passed. They are talking of reopening emigration to British Guiana, and I think they are allowing about a thousand a year to go to Mauritius. Of course that lies with the Government of India.

12600. Have you got Madras emigrants for British Guiana?—A certain number.

12601. Are you in touch with them?—Not, except when they come back. Mr. Kesava Pillay went to British Guiana to make enquiries and to report upon the conditions there.

12602. Was his report satisfactory?—I do not think he was very much in favour of it. Since his report somebody from the Government has been there, and I hear he has made a more favourable report. While I was in South Africa, I saw in the papers that there was talk about their reopening emigration to British Guiana.

12603. If it is reopened will it be of economic assistance to the labourers?—It will depend upon the conditions; you will have to have a more careful enquiry into the conditions in those places than in places like Ceylon and there you will want careful safeguarding to see that the people who emigrate realise what they are in for.

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12604. Have you any definite opinion whether the economic future of this class in Madras will be satisfactorily righted?—I hope it will become so.

12605. You think it will?—Yes; I think they are wakening up in a most remarkable degree. They are getting on. They are nominated on the Taluk Boards, the Municipal Councils, the Legislative Council and so on.

12606. A spirit of hope is being awakened?—I think it is.

12607. And with that and thrift, good will come?—I hope so.

12608. Is it the case that in the past no land was held by the depressed classes?—It was extremely difficult for them to get it.

12609. Have you got the system here of *inam* lands being held by village servants?—There is an odd case here and there of that sort; in a few villages there might be *inam* lands, but it is not general. There was real difficulty in getting them, more in the South and in the West than in the North; the Telugu country is more free from this prejudice. I think.

12610. In the adjoining districts of Bombay they hold a good deal of land?—Do they? Is that a Telugu district?

12611. Kanarese?—You mean Bellary.

12612. Is the population of the Madras Presidency increasing rapidlv?—It did not in the last decade, although it may be going up now.

12613. Is there much movement from the unfavoured districts to the favoured; from the dry tracts to the deltas?—You mean, to stay there?

12614. Yes?—Not really a large movement; there would be if there were room.

12615. Was there in the past when the irrigation canals were opened?—Yes, it was very large then. In Godavari and Kistna they have a large number of people who came there from the dry tracts, such as Vizagapatam.

12616. You were asked just now whether a wage-earner receiving an increased wage spends his increase on liquor. Can you tell us what is the average expenditure on liquor?—No, I cannot.

12617. What is the total abkari revenue?—I do not know. I will find out. It is in the Administration Report.

Dewan Bahadur Raghavayya: It is from 4 to 5 crores.

12618. *Sir Henry Lawrence:* You have had no enquiry to ascertain what is the family budget?—I am sorry to say we have not worked out family budgets at all.

12619. *Sir Ganga Ram:* What is the rise in wages since pre-war days?—I was telling the Chairman that we cannot judge that, because we have no figures for the pre-war wages. We have no real figures for comparison. The pre-war figures, instead of giving the average wage in a particular tract, give the limits within which the wages vary; they put it as two to four annas.

12620. What is it now?—Now we give the averages: 2 annas, 2½ annas, and so on.

12621. Has there been no material rise?—I do not think any comparison is possible. There has been a rise; that is my impression; how much I could not tell.

12622. Is the rise in wages in proportion to the rise in the price of food-stuffs?—I do not know. The wages census for this year is at present going on, and the wages census of pre-war years does not give a basis on which we can give a comparison.

12623. *Sir Thomas Middleton:* In the statement of figures extracted from the census you say: " Cultivation in this Presidency supports as workers and dependants 30,000,000 out of 43,000,000 inhabitants as enumerated in the census of 1921, or 7 out of every 10 persons. Of these, farm servants and field labourers number 3 out of every 10." That is, there are 3 labourers against 4 of the occupying class. In view of the size of the holdings in this Presidency the ratio between occupiers and employees is very narrow; it

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seems to me a very close similarity in numbers. Do you know whether, included under farm servants and field labourers, there is a number of relatives of occupiers?—I do not know. Do you mean you are surprised the number of labourers is not larger?

12624. I am surprised the number of labourers is so large in view of the small holdings; there seems to be much more hired labour than can be accounted for by the area available under cultivation. I was wondering whether that number might not be affected by the inclusion of the relatives of occupiers of land under one or the other of these categories. I know that there is very often difficulty in connection with census figures in distinguishing between relatives of occupiers and hired labourers?—But I think " three out of every ten " means 7 to 3. That is how I read it. 30 millions out of 43 millions are dependent on cultivation. Of these 30 millions, three out of every ten are labourers. That is my idea.

12625. I was not sure which was meant?—That is how I read it; that is what I think it means.

12626. Then I have misunderstood your figures. I thought the ratio was 4 to 3; but I now see it is 7 to 3?—I thought it was the other way; I thought I underestimated the number of labourers, and that some of the labourers might have shown themselves as owners or tenants.

12627. I was not sure of the point; I looked at the percentages; we have much the same percentage for labourers as for tenants or landowners, and I came to the conclusion that what was meant was 4 occupiers to 3 labourers? —I will verify it.

Dr. Hyder: I understand you have taken the figures from the Census Report. This is what is stated in the Census Report: " Of every 10 agriculturists 4 are cultivating landlords, 3 are labourers, 2 are cultivating tenants, and 1 is a non-cultivating rent receiver or rent payer. At the same time there is a tendency throughout the 20 years for cultivating landlords and labourers to lose ground to the cultivating tenant and the non-cultivating rent-receiver or rent payer."

12628. *Sir Thomas Middleton:* You describe the work you are doing in the Bellary district, where you are endeavouring to settle landless labourers on holdings of about 4 acres. Do you expect these men to find labour locally, or are you going to find them work as migratory labourers?—I do not think they will be employing labour. The average is four acres; that includes irrigated land, well-land and all sorts of land, so that one man can cultivate four acres of these very light dry lands.

12629. I was thinking of the supplementary work of the settlers?—They live in the villages near by; sometimes they go to their own holding, and sometimes work for their master.

12630. In view of the risks of scarcity in this district, seeing that work would not be available in famine times, what would be his position? He has got four acres of land in his own occupation, and he has been depending very largely on labour in local holdings; when a bad year comes that source of labour dries up, and at the same time his own crop fails?—I think, in a good season he may out of these four acres supplement his wages and then have something to fall back upon when the bad times come.

12631. You think he will be all right in a bad season?—He will get in a good season a little over a poor living wage, and I hope that with the extra amount he gets he will be able to tide over a bad season.

12632. You do not anticipate that there will be a tendency for the population of that precarious tract to increase?—I do not think so; that would be the danger; that is the danger of which I was telling the Chairman; I do not think they would emigrate.

12633. From the point of view of the labourer and from the point of view of the country, which do you consider the more desirable type of supplementary labour; that which you get in the locality or that which you get by

migrating to districts where there is a big demand for labour?—From the point of view of the labourer, I think the labourer would do very well if he could live all the year round in one place.

12634. From the point of view of the economic position of the country, which type of supplementary labour would you prefer?—I think sufficient labour must go to these districts for harvests and other things.

12635. Is it not the case that when a system of migratory labour is developed in any area, there comes in, as Sir Henry Lawrence suggested, a considerable sum by way of remittances?—Yes.

12636. I am thinking now of the case of Italian labour and Irish labour, for example?—Yes.

12637. And in the case of both these countries, migratory labour has become of considerable economic importance to the country?—Yes, in the case of both countries.

12638. What I was asking myself was whether you, in charge of labour questions in this Presidency, aim at developing migratory labour, or whether you aim rather at providing local work in districts such as Anantapur and Bellary?—In Anantapur and Bellary, they are too far away; that is the difficulty with those places; they are too far away from the delta tracts to come down there. I do not think they would do it very much. Dewan Bahadur Raghavayya would know better.

12639. *Dewan Bahadur Raghavayya:* Very few come?—They are very few; from the neighbouring districts they come swarming in the time of the harvest, but I should not think a very large number comes from these districts I am mentioning.

12640. *Sir Thomas Middleton:* Is that because at present they are thinly populated?—Yes.

12641. If, as a result of your efforts at settlement, the population should increase, there is always an opening for migratory labour for these people?—Yes.

12642. You mentioned that there was a certain proportion of what are called ' tied ' cottages in this Presidency. I did not realise that such cottages were found here?—Not so many; Chingleput, South Arcot, Tanjore and perhaps Trichinopoly are perhaps the main places.

12643. That is quite an exceptional state of affairs in the Madras Presidency, is it not?—Yes.

12644. It is not an urgent question as in some other countries?—It is rather urgent in these particular districts.

12645. The sites are so limited?—Yes.

12646. *Sir Henry Lawrence:* What is the result of the ' tied ' cottages?—The result is, I think, that these people do not get a good chance; they do not get the chance of natural competition.

12647. *Sir Thomas Middleton:* We had a considerable amount of discussion this morning as to whether the Indian cultivator was as thrifty as he might be. Can you tell me whether the village *panchangamdar* whom you mention is paid a salary or is paid by results?—He is paid so much per plough, or something of that sort; perhaps he may have *inam* land.

12648. He predicts the weather?—Yes, and frames the almanac.

12649. *Dr. Hyder:* On the question of wages, are those figures for any particular year or are they the average figures?—These are the average of that year, and then we compare them with the average of this year.

12650. You give different figures, 2 annas, 8 annas and so on; what are they?—Those were the figures that were ascertained in 1921.

12651. Could you tell me the number of days in the year for which the labourer would find so much work at 2 annas, 5 annas, and so on?—I could not tell you; it is very difficult indeed; it is different according to the land he is working on; it would depend on whether it was irrigated or not.

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12652. Could you give us any idea as regards the supplementary earnings of the family; that is to say, there might be the wage of the head of the family, and there would be his wife and one or two children, perhaps, working; how much would they bring in at harvesting?—I have said here that the wife gets two-thirds of what the man would get, on an average.

12653. You could not give us any figure as to the number of days during which such a wage would be earned?—No, I cannot tell you anything about that.

12654. You could not give us any idea about their spare-time earnings, as to what they earn, and for how many days they earn in their spare time, when they have got no field operations?—Apart from this census which is being undertaken?

12655. Could I have from you a rough guess as to the amount of money which an agriculturist's family obtains during all the 365 days of the year, a rough guess as to what it will come to from all sources, agriculture and subsidiary occupations?—I do not think my guess would be of any value.

12656. Have you ever been a jail officer?—I have had sub-jails under me; that is the nearest I got to being a jail officer.

12657. How much did you allow per prisoner?—I have forgotten.

I will give you the figure; three-fourths of a seer is the daily allowance in the Presidency.

The Chairman: Simple confinement or hard labour?

Dr. Hyder: That does not appear clearly.

The Chairman: That is the real point.

12658. *Dr. Hyder:* I was wondering whether you could tell me how much rice would be required by an agriculturist's family, consisting of a man, his wife, a son and one or two more children. How much rice would be required for such a family?—You say they want three-fourths of a seer per head.

12659. That is the jail allowance. In your opinion, how much rice would be required for such a family?—I suppose it comes to about 2¾ seers for the whole family, but I do not know, and I would rather not give an opinion; I am not good at these things; if you got an opinion from an expert, it would differ from mine.

12660. You must have come across this Census Report relating to your Presidency?—Yes.

12661. There are some very interesting tables with regard to the incidence of disease, which I showed you, and the most affected districts are Ganjam and Vizagapatam; that table relates to leprosy. I was wondering whether there was any relation between the nourishment factor and the liability to such diseases as leprosy?—I have no idea. The latest theory, I think, is that it is due to eating bad fish; I do not know anything about leprosy.

12662. A question was put to you by Mr. Calvert, who was quoting from the Report of the Fiscal Commission, regarding the disinclination of Indians to work in factories. I was wondering whether it is known to you that about the beginning of the last century, in 1800, it was said of Italy, a country which perhaps you know intimately, and of Germany, that the same disinclination prevailed there, and they would never become industrial. I was wondering whether you had come across any such statement in any book?—No.

12663. In your memorandum you say, "it would be impossible to insist on accident or sickness insurance or maternity benefits". I will leave aside the other things, but as regards maternity benefits, why should it be impossible?—It is very difficult to do it in these rural areas.

12664. Is it because the woman is given a daily wage?—That is what I think in regard to maternity; it is very rarely that a woman is a permanent servant, and if she is merely on daily wages it is difficult to give her maternity benefits.

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12665. That would apply to agricultural labour; would you apply it to industrial labour?—I do not know; the question did come up some time ago.

12666. With regard to emigration of labour to Burma, you say that the labour is seasonal?—Yes.

12667. I have an impression that the labour is seasonal, that is to say, these labourers go over to Burma to harvest the rice crop and come back; they do not settle there?—Some do, and work in the factories there.

12668. *Sir James MacKenna:* The majority of them?—Yes, the majority; some go just for the season.

12669. *Dr. Hyder:* It is an expensive journey; I was wondering who provided the funds?—These contractors, I understand; of course, it is not regulated in any way, and I cannot give you the same information about it as about emigration to foreign countries. That is one kind of migration, from one part of India to another; that is not regulated. I have met these contractors in various places, and they seemed to have done rather well in taking agricultural and other labourers over to Burma.

12670. I want to put to you that it would not be desirable to restrict the free movement of labour, either within the Presidency or outside the Presidency, just as it would not be desirable to restrict the movement of, say, the professional classes, if they found a chance of getting better salaries elsewhere?—It would be unfair, I think.

12671. *Dewan Bahadur Raghavayya:* You said that in the case of disafforested areas, on which some of the depressed class members have been settled, it has been possible to carve out economic holdings?—In some cases, yes.

12672. Have any of those holdings been worked on co-operative lines?—Yes, and also under the Divi Island project. I think the Mettur project would be quite possible to work on co-operative lines, but not co-operative cultivation; each man cultivates his own plot.

12673. Not joint cultivation?—Not joint cultivation.

12674. What I want to know is, have the men to whom these holdings have been assigned worked under the auspices of a co-operative society? Have they been having recourse to the advice of the agricultural officers in regard to better farming methods?—I think they have.

12675. Have you been observing, on the whole, better farming on these small farms; is the farming done better than on an average small holding?—No, I do not think so, because these persons have not the experience; they are not farmers. they are learning farming, and I think a man who is already the owner of a farm is more likely to be a good farmer than a labourer.

12676. So the advice of the Agricultural Department has not yet been tried?—I think it helped them; but I do not think that these labourers are better farmers than the other small holders.

12677. In the districts of Bellary and Anantapur, where the poor soils prevail and where much land is out of cultivation, has any attempt been made to encourage these depressed class members to raise such perennial crops as the palmyra or the date or the aloe which, though not yielding food, would be commercially profitable and would also afford occupation during spare time?—No, I do not think so.

12678. No attempt has yet been made?—I do not think so.

12679. In your memorandum I see that you have said how a certain amount of labour migrates from the dry districts to the delta districts during the harvest season. You have said nothing about the housing of that labour during the time it remains in the delta districts to do the harvest. My impression is that no housing accommodation is made, with the result that that labour lives mostly on mounds near the rice fields and very often epidemics break out? That is what I mentioned here. They live in the middle of rice fields.

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12680. On the fields themselves?—On the fields, in one corner. When the field is low they put a heap of earth in one corner; there may be one or two or three houses on that mound.

12681. No roofing accommodation is provided?—No.

12682. In regard to drink, I am sure you are aware of the experiment which is being tried in this Presidency by prohibiting country liquor and arrack in five taluks in the Presidency where toddy is used. That is what Professor Gangulee was referring to?—When was that?

12683. Two years ago?—That is when I left.

12684. There is one feature in the census figures in regard to which I should like to have the benefit of your opinion. There is a distinct fall in the last census as compared with the census of 1911 in the number of cultivating landowners and there is a rise in the number of cultivating tenants per thousand. What do you think it is due to? Could you explain that phenomenon from your knowledge of the districts and your general experience?—It may be that the middle classes are taking to other pursuits. Some of these landowners instead of farming themselves are leasing their lands out to tenants. That has a good deal to do with it.

12685. There is an increase in the number of non-cultivating owners?—I say it may be due to the fact that their standard of life is rising and they try to get into Government service, try to get into law and other professions, leasing out their lands to other people. I think there is a tendency to that effect.

12686. Do you think it may be partly due to the fact that the cultivating landowner has to part with his land to clear the debt which he contracts and has to seek the protection of becoming a cultivating tenant?—It may be that also.

Dr. Hyder: There is a remarkable increase in this Presidency in the number of non-cultivating tenants. Could you explain that, apart from the circumstances perhaps of Malabar where you have the sub-tenures?

12687. *Dewan Bahadur Raghavayya:* 28 per thousand as against the other method of dealing with the lands. The big *mirasidar* non-cultivating tenant leases out his lands; he sub-leases them to the cultivating tenants. That may explain it?—It is rather complicated.

12688. Of late, the depressed classes for whose uplift you are working have got, even by the door of election, into such organisations as co-operative societies and village panchayats?—I believe there are some cases.

12689. Yes; I am enquiring as to how far it is done?—There are some cases; but I do not know whether they are isolated cases or whether they are general. I am making enquiries at present.

12690. *Mr. Calvert:* I should like to ask you whether you foresee any likelihood of any early relief to rural congestion from the expansion of industries within the Presidency itself?—No; I do not see much at present.

12691. *Professor Gangulee:* What influence do the labourers who return from overseas exert on their own villages, morally and socially?—Those who come from the depressed classes certainly have a very strong influence in the way that even though they only go as far as Burma they have a different view of their position; that is one point. Then they help to build in a number of cases a substantial house, which is a good thing; it means that he wants to stay in the hope that he may get a better house of that sort himself. I think that as a rule their influence is quite good.

12692. In social outlook?—Yes.

12693. Leading to a decided change?—I think it leads to a distinct change.

12694. *The Chairman:* You mentioned during the course of your evidence that the Presidency of Bombay was more wealthy than this Presidency. How do you account for that fact?—With the larger amount of industries, cotton mills and others in Bombay, I suppose they are better off. I always feel that they are.

12695. Apart from the question of trade at the port of Bombay, do you think that the growing of money crops rather than of food crops has any bearing on the point?—There I cannot speak with any authority at all. I do not know the Bombay agricultural side at all. I do not even know that they grow money crops.

12696. I do not say they do. I wanted to know whether you had that in mind?—I do not know about that.

(The witness withdrew.)

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APPENDIX.

Statement showing the budget grant for the Labour Department for the current official year and the actual expenditure incurred during 1924-25 and 1925-26.

37-R.e. Miscellaneous Departments—Miscellaneous—Commissioner of Labour.	Accounts 1924-25.	Accounts 1925-26.	Budget grant 1926-27.
	Rs.	Rs.	Rs.
(*i*) *Direction.*			
Pay, travelling allowance, contingencies, etc., of the Commissioner.	(1) 2,11,624	56,726	69,600
(*ii*) *Depressed Classes.*			
District staffs for conducting special operations for the amelioration of depressed classes. Pay, travelling allowance, contingencies, etc.	A.	1,58,043	1,98,000
(*iii*) *Depressed Classes—Betterment.*			
(1) *Establishment*—Pay of teachers .	1,23,377	1,47,156	2,20,600
Contingencies . . .	13,048	17,123	23,300
(2) *Supplies and Services*—			
(*a*) Scholarship and stipends .	19,637	24,039	43,500
(*b*) Sheds and equipments for schools .	23,328	24,886	49,000
(3) Grants-in-aid—Miscellaneous—Recurring—Grants to private Institutions, Taluk Boards, etc., for the betterment of depressed classes, for opening new schools and hostel for Adi Dravidas.	20,500	41,259	38,200
(4) Grants-in-aid—Grants for wells, pathways, burial grounds, sanitary improvements for cheris in Madras City and construction of houses at Pulianthope.	1,61,264	1,45,847	2,10,900
Criminal Tribes and Settlements.			
(*iv*) Kallars—Reclamation . . .	1,61,732	2,13,665	3,11,000
(*v*) Settlement—Kavali . . .	76,797	89,998	80,000
(*vi*) ,, Sitanagram . . .	12,058	33,562	16,600

(A included in (1) Direction.)

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Statement showing the budget grant for the Labour Department for the current official year and the actual expenditure incurred during 1924-25 and 1925-26—contd.

37-R.e. Miscellaneous Departments—Miscellaneous—Commissioner of Labour.	Accounts 1924-25.	Accounts 1925-26.	Budget grant 1926-27.
	Rs.	Rs.	Rs.
Criminal Tribes and Settlements—contd.			
(*vii*) Settlement—Stuartpuram . . .	20,863	22,847	22,500
(*viii*) „ Aziznagar . . .	7,359	8,752	10,900
(*ix*) „ Kulasekharapatnam .	4,426	2,687	2,900
(*x*) „ Siddhapuram . . .	2,022	3,187	7,200
(*xi*) „ Pallavaram . . .	6,936	8,723	8,100
(*xii*) „ Reformatory Perambur .	26,746	9,697	10,500
(*xiii*) Industrial School, Perambur . .		15,922	17,100
(*xiv*) Industrial School for girls, Nellore .	2,756	8,339	8,800
(*xv*) Eonga Dasaris	11,900	8,450	8,100
(*xvi*) Industrial Settlements—General . .	1,957	4,416	7,900
TOTAL	9,08,350	10,44,774	13,64,700

	Balance outstanding on 31st March 1926.	Budget grant for Advance to be paid in 1926-27.
	Rs.	Rs.
Loans and advances for acquisition of house-sites, house building, etc.	10,45,015	5,04 500

Sir George Paddison.

Sir K. V. REDDI NAYUDU, Kt., B.A., B.L., M.L.C., Madras.

Replies to the Questionnaire.

INTRODUCTION.

I belong to the Kapu caste, a purely agricultural community. My kith and kin are tillers of the soil and producers of corn. I was Minister of Agriculture in the Government of Madras during the first three years after the introduction of Reforms. I own lands of considerable extent and have always taken a keen interest in agriculture.

QUESTIONS 2 AND 23.—AGRICULTURAL AND GENERAL EDUCATION.—I prefer to answer these two questions together as they have considerable bearing upon each other.

We have an Agricultural College at Coimbatore where Diplomas were prior to 1922 granted to successful candidates. I was partly responsible for having the college affiliated to the Madras University and the B.Sc. Degree in Agriculture instituted. There are no high schools at all but there are two agricultural middle schools where instruction is imparted in vernacular. One of these schools was started by me but I am sorry to state that it has not attracted a sufficient number of students to keep it a going.

2. (*i*) The supply of Professors in the College is sufficient and so it is in the two middle schools. I cannot say that the institutions themselves are sufficient in number. In the Legislative Council demands have been made during the last three years for an agricultural school for the Tamil part of the Province but how far the new institution will attract boys of the right type it is difficult to predict.

(*iii*), (*v*) *and* (*vi*) I have always held the opinion that both teachers and pupils in the agricultural schools should be drawn from the agricultural classes. While I was Minister I insisted upon boys being drawn only from those classes to the College Courses and in 1923 I selected the boys myself with the assistance of the Director of Agriculture. But in this, as in other cases of Collegiate Courses, education is received by the boys with only one view, namely, entering the Government service. When I selected boys I plainly told them they should go back to their farms and utilise the knowledge they acquired at college on their own fields. But this certainly had no effect on them and I found almost every one of them asking for a Government appointment after they obtained their Degrees. There is no incentive other than public service which induces lads to study agriculture. That is the reason why most of the pupils that hitherto received agricultural education, happened to belong to the community of Brahmins or of high class Non-Brahmins whose fathers were not actual agriculturists.

(*ix*) The careers of the majority of the students who have studied agriculture have been entirely limited to public service starting as Demonstrators, some of them have risen to the place of a Deputy Director while others are employed as Professors in the College and in the Research institute. Very few have taken to the profession of agriculture.

(*x*) Under the present general system of education it is not possible to make agriculture attractive to middle class youths. This system was conceived nearly 50 years ago and has been developed on the same old lines. At that time the exigencies of Government required a number of clerks, officers, ministerial and executive, in various departments such as Revenue, Judicial, Secretariat and the like; and since fairly respectable careers with power and prestige were thrown open to Indians, University education naturally attracted a very large number of pupils. Conditions have changed. The requirements of Government are more than met and to-day we are face to face with the problem of unemployment among the educated middle classes. About 1,500 graduates are being turned out of the portals of the Madras University every year and the number is bound to increase now that we have another University in the Andhra portion of the Province. The public service and the professions

cannot absorb more than 750 every year. Even if another 250 can be employed by banks, firms and other agencies, there are still left more than 500 graduates, not to speak of an equal number of under-graduates without any employment whatsoever. Their education having been designed and imparted with a view to make them fit to be clerks and officials, those of them who were not so employed find themselves unfit for any other avocation. Manual work they consider degrading. They have no training for industries, or for banking or trading. The result is that they find themselves unable to earn enough for their livelihood. They feel that their investment in education has ended in loss. They become discontented. They turn politicians and agitators, with what consequences it is difficult to predict at present. Nothing concerning agriculture is taught to them. In fact they look down upon agriculture as a profession not worthy of their education, prestige, or status.

QUESTION 23.—GENERAL EDUCATION.—This system of education is quite unsuited to modern conditions and a change is required. At the stage when a student passes his Third Form, that is to say, when he finishes his middle school course, I would suggest that not more than 10 per cent of the boys from the rural area should be allowed to take to higher or collegiate education.

The headmaster of the school has to certify that those boys are fit for such cultural education. Of the remaining 90 per cent, 60 should be asked to go to agricultural high schools and the remaining 30 to go to industrial schools. This industrial and agricultural education must be made compulsory until the age of 16 and those boys must not be permitted to study in any other schools. It is too soon to give any idea of the way in which compulsory elementary education is working in rural areas. So far, nothing untoward has happened and I expect it will work all right.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (*i*) and (*iii*) The great curse of the agriculturist to-day is his chronic indebtedness. The main causes of his borrowing are his old debts, marriage expenses, cost of educating the children, living beyond means, heavy interest, poor crops, vagaries of rainfall, love of litigation and the like. Of these it is the old debt that is most crushing. Pride forbids him to sell a portion of his land to clear off his debt. In my part of the country an acre is worth Rs. 1,000. Assuming that a man has got three acres of land it will be worth Rs. 3,000. If he has a debt of Rs. 1,000 he has to pay an interest of Rs. 90 a year at the least. His 3 acres will yield three *putties* of paddy, worth about Rs. 180. Half this amount is required for the *kist* and cultivation expenses. The balance will be Rs. 90 which will meet the interest he has to pay. But then he will have nothing to live by. So he does not pay the interest and it accumulates and in years will eat up the whole land. Amongst the lower classes the drink evil has spread and is now one of the main causes of borrowings.

(*b*) The co-operative credit societies have given immense relief to the ryots. They have secured cheap credit for his current needs such as preparing the lands, sowing, transplanting, weeding, harvesting, *kist* paying, and even marketing. But he has not been absolved from the curse of chronic indebtedness. That is a mill stone round his neck and the co-operative movement did not and could not extricate him from it. The establishment of land mortgage banks alone can save the ryots and legislation to that effect on the lines of the Federal Farm Loans Act of the United States of America will have to be undertaken.

(*c*) I am not in favour of taking any measures to control the credit of cultivators. I do not know of any non-terminable mortgages in this Province. The old saying "once a mortgage always a mortgage" is true in this Province and in the sense in which I take it, it is always redeemable.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) Excessive sub-division of holdings exists in this Province as well as elsewhere in India, perhaps more widely in this Province than in others. It is a settled fact. There is no denying that it impairs agricultural efficiency and causes loss to the cultivator. I cannot think of any means for reducing this, excepting intensive cultivation.

(*b*) The obstacle in the way of consolidation is the Hindu Law itself. The Law of Partition and the right by birth of every male child for a share in the family property necessarily leads to fragmentation and I find it impossible to overcome this difficulty. Hindu law is intermixed with Hindu religion and the cry of religion in danger will at once be raised if any attempt is made to alter the law.

QUESTION 8.—IRRIGATION.—(*a*) I belong to the Godavari district which is blessed with one of the best irrigation systems in India. All the canals in this system are perennial. Non-perennial or inundation canals are not to be found in this district or for the matter of that in this Province.

There are, however, several hill streams in South India which are not *bunded* up by any anicuts but which supply water in flood time. These may be treated as perennial, because they supply water quite as well as the delta canals throughout the period of the crop. They also fill tanks.

(*i*) In spite of the extensive Godavari irrigation system which irrigates seven lakhs of acres first crops and three lakhs of acres second crop, there is still land to the extent of 4 or 5 lakhs of acres capable of being irrigated by the existing system. I advocate extension.

In other parts of the Province, there are various schemes proposed and undertaken by the Public Works Department for which plans and estimates have also been prepared and in some cases even sanctioned and work has been commenced. The most notable case amongst the sanctioned schemes is of course what is known as the Mettur project, which is to cost 6 crores and irrigate 3 lakhs of acres besides supplementing supply to the existing area of 10 lakhs in the Tanjore delta. Amongst those for which estimates have been prepared, the most important, beneficial and necessary works are (*i*) the Thungabadra Project which commands 35 lakhs of acres of famine stricken country and may easily supply 7 lakhs of acres, and (*ii*) the Kistna Reservoir Project which commands and can easily irrigate about 10 lakhs of acres of first crop and 7 lakhs of acres in the second crop besides insuring the supply for the existing 7 lakhs under the Kistna delta. This work is considered remunerative.

(*ii*) There is no question of extending tanks and ponds. They can but be improved. The Tank Restoration Scheme has been in operation for the last thirty years. For want of funds, however, sufficient progress could not be made. If tanks include reservoirs there are as many as 40 schemes for which estimates have been prepared and which are capable of irrigating several lakhs of acres.

(*iii*) The Industries Department has undertaken the task of boring operations and has been assisting the ryots in digging wells for irrigation purposes. Throughout the Province nearly ten lakhs of acres of land are irrigated by these wells as against thirty lakhs of acres by tanks and thirty-three lakhs of canals. There is a large scope for extension of irrigation under wells and if only Government come to the rescue and administer the Loans Act in a more liberal spirit than at present, the possibilities of increased food production are easily realised.

So far as I am aware finance is the first obstacle to the extension of irrigation in this Province. Secondly there is the policy of the Government with regard to the construction of irrigation works. The question of finance is not at present very embarrassing. Time was when the Loan Policy of the Government of India was limited and restricted. But after the Reforms the borrowing power of the Local Government has largely been increased. Formerly too it used to be said that loans for irrigation works would not be sanctioned by the Secretary of State for India, unless a definite irrigation law was passed. Recent attempts at legislation in this direction however have unfortunately failed, but considering that one of the greatest projects, *viz.*, the Mettur Project costing about 6 crores of rupees has not only been sanctioned by the Secretary of State but the work itself is going on, the condition precedent of having a definite irrigation law does not seem to be insisted on.

Sir K. V. Reddi Nayudu.

The policy of the Government in the construction of irrigation works still remains a serious obstacle to the extension of irrigation. This policy may be briefly stated thus. The Government divide irrigation works into two classes, Productive and Protective. The latter are unproductive but are limited to the famine area and are rarely undertaken except when a crisis arises. The only Protective works that I am aware of and that were undertaken and finished, are the Rushukulia and the Mopadu projects. Both the works were financed by the Government of India probably from the Famine Insurance Fund with that Government. These works must have cost about a crore of rupees and the net revenue therefrom does not seem to amount to an interest of more than one or two per cent. But the more important question is that of Productive works. Here the policy of Government is to undertake such works only as would fetch such net revenue that would amount to 6 per cent interest after the maintenance charges were deducted. Most of the available important works were undertaken and completed long ago, such as the Great Anicuts of Godavari, Kistna, Cauvery, and Pennar. This was at a time when the rate of interest was about 3½ per cent and when the rule was that Government should realise only 4 per cent interest on the amount invested, of course after deducting maintenance charges. Conditions have changed, the rate of interest has risen and easily workable schemes are not available. If the present policy of the Government is to be pursued, it is apprehended that no new works can be undertaken. Schemes there are. The amount to be invested on them is not also large. But if the 6 per cent rule is insisted upon, they cannot be said to be productive. It is submitted that the policy of the Government is neither wise nor just. The benefits and advantages of irrigation schemes cannot be judged by the sole standard of net revenue only. The material prosperity of the ryot due to the increased yield and rise in the price of his land, the increased food production and the consequent increase in national wealth cannot be ignored. In fact in a progressive State the above consideration ought to be the guiding factors in shaping its policy of constructing national works of irrigation. The present policy is no more than a commercial policy in a narrow sense and the sooner it is abolished the better it is for the country as well as for the Government. The increased capacity of the ryots to bear higher taxation not only on land but also in the matter of other taxes such as Excise, Stamp duty, Court fees, and the like as a result of their increased prosperity has also to be taken into consideration as a reason for changing the present policy. It must not also be forgotten that Irrigation is now a Provincial subject where as it was, before the Reforms, a Central or Imperial subject. The policy hereafter should also be provincial and on the lines above indicated. It may further be noted that if instead of taking individual schemes as separate units by themselves whereon the standard required for a productive work is based, the Government should take into account the entire irrigation system of the Province as a unit and the standard of the productive nature of a work is estimated thereon, there will be less difficulty and greater scope for financing irrigation schemes. So far 830 lakhs of rupees have been invested in irrigation works in this Province and an interest of about 10 per cent is at present being realised thereon.

(b) I cannot say that I am satisfied with the existing methods of distributing canal water to cultivators. The four inch pipe introduced about 1908 has created an amount of discontent which has not abated to this day. This system is, I believe, called a continuous supply system. Prior to 1908 there used to be what are known as Palmyrah spouts. These were of almost uniform size. In flood season water used to flow to the tail end and there used to be an uniform supply of water throughout. But when the water fell below the flood level, it could be supplied only by turns in the various reaches of a canal. Such a system of turns is no doubt now avoided by the introduction of pipes of varied calibres. At the same time in actual practice it is discovered that sufficient water did not flow from the 4″ pipe, with the result that the ryot is tempted to make breaches in the channel *bunds* to sufficiently irrigate his lands and thereby commit a breach of law submitting himself to heavy pecuniary penalties. It has got to be admitted, however, that if we exclude the

4" pipe, the introduction of the pipe system has undoubtedly its own advantages. For one thing it prevents wastage of water, for another a proportionate supply of water is guaranteed and thirdly the simultaneous supply of water through the channel is secured. In this connection, perhaps, reference may be made also to a rule made by the Public Works Department and Revenue Department as regards what is known as Black Water. That rule enjoins that this water should not be used for irrigation but could only be used for raising seed beds. The result is that in the lower reaches, transplantation cannot take place until flood water is available which takes place only in the month of July or August. In these lower reaches the fields are naturally low in level and rains set in about that period. The consequence is that transplantation is delayed and very often fields are submerged and the eventual crop is either scanty or lost altogether.

I am not aware of any methods employed to prevent wastage of water by evaporation or absorption in the soil. This probably is due to the fact that the available supply of water from the rivers is more than what is required for our present needs. But if every drop of water is to be utilised for irrigation purposes and all the commandable area is to be brought under irrigation some steps to prevent wastage would become necessary. It is only then that a greater economical use of water could be assured.

At present there is no immediate necessity of devising any measures for economising water.

QUESTION 10.—FERTILISERS.—(*a*) Natural manures can no doubt be used profitably. But these are not available at present in large quantities. *Pati* earth (old village soil) is all exhausted and is not available to-day. Green manure, cattle refuse, cowdung and the rest can be had only in small quantities. The cultivator knows the advantages of using these manures, but cannot get enough. So far as indigenous artificial fertilisers are concerned, the somewhat prohibitive cost is against their use. In recent years the cost of these manures has gone up so high that it is not covered even in two or three years by the price of the increased yield. This increase in price is due to the fact of large quantities of these manures being exported to foreign countries. Bonemeal, fish guano and oil-cakes are enormously exported from this Province to Ceylon and other places, leaving very little in the land of their production. Reduced supply naturally increases prices. I think it is essential that the export of these manures should be prohibited or limited. Railway concessions for conveyance of the manures from place of production to the field should also be arranged, otherwise the cost will be prohibitive. When I was in office I raised the question and the South Indian Railway Company was prepared to reduce fares but I do not know what happened afterwards.

(*b*) I am not aware of any fraudulent adulteration of fertilisers of a serious character. Frauds, if any, are easily detected and that means loss of credit to the producing firm. It is therefore very rarely indulged in.

(*c*) New and improved fertilisers can be popularised only by demonstration of better results in production. Cheapness in cost so as to be within reach of the cultivator and appreciable results alone can induce him to go in for these manures.

(*d*) The only way in which the use of cowdung as fuel can be discouraged is by reducing the cost of fuel itself. 30 years ago, a *putti* of firewood could be had for a rupee. To-day it is worth Rs. 3-8-0. Unless it can be demonstrated that the use of cowdung as manure would fetch more money by increased production, than what it would cost to purchase the firewood required to replace the cowdung cakes, the farmer's wife will never give up the use of the dung for cakes. Demonstration and propaganda, may, however, do a good deal, in inducing the agriculturist from not using cowdung as fuel.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) On a rough estimate I think the average cultivator in my part of the Province does not work for more than 120 days during the year. In the slack season, he mostly wastes his time, goes about to see his relations or attends marriages or goes on

pilgrimage if he has money in hand. He does nothing which fetches him anything.

(*b*) *and* (*c*) State aid coupled with departmental assistance and demonstration will encourage the adoption of subsidiary industries suitable to local conditions such as sericulture and making ropes, baskets and mats. In my part of the country there are extensive coconut gardens and there is a large scope for making ropes and mats with coconut fibre. At present the outer portion of the coconut is to a large extent used as fuel. The obstacles in the way of expansion of such new subsidiary industries are ignorance, want of education, tradition, social conditions, and the like. But these are not insurmountable. The average ryot is fairly intelligent and is anxious to make some little money by subsidiary means. He rears poultry though not on an extensive scale. The good housewife sells eggs, milk, butter and *ghi*.

(*d*) I do think that Government should do more to establish industries connected with preparation of agricultural produce for consumption as well as for sale and export. In my district paddy is produced largely in the delta and there are rice mills in almost every village. Nothing need be done in that direction. But we have also extensive coconut gardens and copra is exported to other countries largely. There is room for a decent coconut oil factory in the Godavari district.

(*e*) Subsidiary employment can be found by encouraging industrial concerns to move to rural areas. But the industry must be such that vigorous work can be done in agricultural slack season. Rice mills, for instance, have a season of their own. In other months they are idle. During that period they can be used for oil pressing. Labour will be available in both periods excepting for about 30 or 40 days during transplantation time and a similar period in the harvest time.

QUESTION 25.—WELFARE OF RURAL POPULATION.—The average villager in this Province has no club, no recreation ground, no hospital or dispensary, no village road, and no post office, much less a public library. Very often water-supply is insufficient and such water as may be available is often contaminated. Schools are now spreading and the co-operative movement is extending its activities but it will take a long time before we can have one school and one co-operative society for every village or group of neighbouring villages. Until that stage is reached I do not think that there is much use in undertaking any economic survey. The average ryot is unwilling to disclose his economical position.

His pride does not permit him to tell us what his debt is. He very often exaggerates his income except when there is an apprehension of income-tax being levied. If there is a co-operative society of some standing in the village, the members and the directors will know the economic condition of every member and more accurate information will be available, regarding the produce of the land, the expenses of cultivation, other sources of income and the exact debt of a family and the like. I should like therefore that Government should wait for another decade before any economic survey is undertaken.

QUESTION 26.—STATISTICS.—(*a*) At present statistics of areas and crops are not available for zamindari land except in surveyed areas. In unsurveyed tracts of the zamindari area, reports are no doubt sent but these are based on what are known as *paimash* accounts and are so inaccurate that sometimes lakhs of acres will be found missing. I am of opinion that accurate reports from zamindari tracts which form nearly a third of the extent in the Province, will be of immense use, and in order to get at such reports survey should be made compulsory and the *Karnam* should be directed to prepare accurate accounts. At present the village officers are subject in the zamindari tracts to a dual control and this leads to laxity in discharge of duties. So far at least as the submission of the statistical reports is concerned, the village officers in the zamindari tracts must be brought under the direct control and supervision of the Government revenue officers.

The estimates of the yield of agricultural produce of such crops as paddy and cotton are fairly correct but in the case of dry crops a great deal of

difficulty is experienced in ascertaining the approximate yield. In the Ceded Districts and in part of Guntur, for instance, cotton and *korra* are sown in the same field, no doubt in different rows. At present instead of showing a mixture crop over a definite area, the *Karnam* thinks that two-thirds of such mixture crops is cotton and one-third is *korra* and reports accordingly. This belief has often led to inaccurate estimates. If a joint crop return is given, the higher authorities may be in a better position to estimate the approximate yield.

(*ii*) Rail-borne Trade Returns used to be published by the Board of Revenue and later by the Director of Industries up till 1922. These returns were of some value not only in showing the extent of production in particular areas but also in showing the quantities available for export.

In the craze for retrenchment, that immediately followed the introduction of Reforms, these returns were abolished following perhaps the action of the Government of India in this matter. Instead of abolishing these returns, if they are improved on the lines of the Report of the Railway Statistics Committee they will surely serve a useful purpose.

(*iii*) At present a Census of Cattle and Implements is taken once in five years. This work is done rather very carelessly. The *Karnam* very often sits at his house and asks the village *Vettian* as to how many cattle A or B or C has and between them would be manufactured a census which, when used as evidence in courts of law, has caused immense mischief to individual litigant ryots. I am not however sure whether it is worth while to improve this system of enumerating livestock.

(*b*) At present fortnightly retail prices are compiled by the Agricultural Department and fortnightly wholesale prices by the Director of Industries, while average weekly prices and average monthly prices are compiled by the Board of Revenue. I am of opinion that all this work must be done by one agency and one department.

Sir K. V. Reddi Nayudu.

Oral Evidence.

12697. *The Chairman:* Sir K. V. Reddi, you have been good enough to provide the Commission with a very interesting memorandum which my colleagues and I have read and we are greatly obliged to you for the trouble you have taken to make your views so clear. Do you wish at this stage to say anything in amplification of your note of evidence or shall I ask you one or two questions?—I am at your service. I think there are one or two points which I wish to place before the Commission, possibly the information is already before the Commission. But I should like to bring certain figures to your notice as to how much money is being spent on agriculture in other countries,* and what the produce† is in other countries of two important crops: paddy and cotton.

12698. Would you like to put that in the shape of a statement now, or in the form of a statement in writing?—I can place that before you to-morrow.

12699. If you could send it to the Secretaries, that would probably be the best way, unless you wish to say anything on the point?—No; I just wanted to place that information before you.

12700. Do I gather that the general tendency of those figures is, in your mind, to show that more money might with advantage be spent in this Presidency on those subjects?—Yes.

12701. From your experience (and as a Member of Government and a Minister of Agriculture in this Presidency it has been wide) do you feel that the money so far spent on research, on propaganda, and by the Agricultural Department generally, has shown a good return in increased prosperity?—It has been well spent, I would say.

12702. Of course, in view of of the immense population that inhabits this Presidency and in face of an ancient system of agriculture, the Agricultural Department is very, very, young, is it not?—It is.

12703. So that even such research work as has been done already may be expected to yield greater results in the future?—Yes.

12704. It must take time to popularise new methods and new varieties?—Naturally.

12705. I should like to ask you one or two questions on your memorandum which, I think, in most respects speaks for itself; is very clear, if I may say so. You were responsible for initiating a vernacular middle school, were you not?—Yes.

12706. Was your intention there to educate boys who would return to their paternal acres?—Yes.

12707. And you found that it failed?—It did fail.

12708. Through lack of demand for that type of education?—Well, possibly the parents thought that their boys did not learn much in the schools.

12709. But that is really what I am saying, through lack of demand for that type of education?—Yes. It may be put so.

12710. Do you think that the lack of demand is due to the fact that parents still wish their children to be taught English?—Not exactly. It was my impression at any rate that we could not give them a sufficiently good education in those schools, not one much better than what their fathers would have taught them on the field.

12711. I should like to be quite clear as to your last answer. Are you thinking of vocational training in agriculture or a general education in the vernacular?—These schools gave a little more than this general education.

12712. They were chiefly vocational, were they?—Yes, teaching was given in the field.

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* See Appendix, page 381. † Not printed.

12713. Would you say that agriculture was one of the main subjects taught or that agriculture was used as a channel of education?—My own impression has been that agriculture was taught definitely as a vocation in the middle schools.

12714. As a vocation?—Yes.

12715. You think that these schools rather slipped between two stools; they neither provided a good enough general education nor a sufficiently good vocational training?—I should think that is a correct description.

12716. Do you feel that by any improvement in the curriculum it might have been possible to meet the demand?—Yes, and provided also provision is made for a little higher standard than what we could give in English in these middle schools.

12717. But when I spoke of English I was of course thinking of the fact that in this country, at this moment, English is the only door to a University career. Do you not think that fact limits the demand for a purely vernacular education?—It does to some extent, but I should take it that, provided the right kind of education is given in agriculture alone and in the vernacular, it will serve some purpose and possibly pupils can be found.

12718. Do you yourself feel that there is taking place and becoming apparent any reaction against the extreme demand for University education because of the serious unemployment amongst graduates?—I am one of those who think that University education has been overdone here.

12719. Do you think the public feels it; do you think there is any slackening in the demand for University education?—Not yet generally, but I feel that thinking men who apply their minds to it feel that they are wasting their money on it.

12720. Until you come to the point when parents and boys begin to realise what you now realise you are not likely to find a diminished demand for University education, are you?—No; that stage has not yet been reached.

12721. You do not look forward to the initiation of any scheme which would make agriculture attractive to middle class youths; you would feel satisfied if you could make it more attractive to boys of the agricultural class?—Yes, that is to say, if sufficient attractions were available and they could be taught in such a way as to make it more profitable.

12722. If you could give the son of a cultivator good general education of such a nature as to fit him to be a better farmer than his father, would you regard that as the ideal?—Yes.

12723. You were at pains, when you were responsible for the matter, to pick the entrants for the Agricultural College very carefully, I observe?—Yes.

12724. You picked mostly rural boys?—Yes, boys whose parents were engaged in agriculture.

12725. Do you know whether in fact many boys, the sons of cultivators, are at the moment in the Agricultural College at Coimbatore?—I do not know just now; there were three years ago.

12726. Is it not the case that unless a great effort is made the usual experience is that it is the urban boy who goes to the Agricultural College because he wishes to enter a public service?—That is so, yes.

12727. One page 346 you are talking about the difficulty of relieving the indebtedness of the agriculturist and you describe how he gradually sinks into a position in which he had to choose between a bare living for himself and his family and the repayment of interest?—Yes.

12728. And of course he chooses the former?—Yes.

12729. Is it the fact that that choice is possible when the *sowcar* lends the money while it is not possible when Government lends the money?—There are various reasons why *taccavi* is not keenly taken up; one reason is that it is not easily available; there is some trouble with the clerks and underlings in the revenue office.

Sir K. V. Reddi Nayudu.

12730. Does that mean irksome enquiries?—Yes, and something worse.

12731. They may not get the whole of the 100 rupees they borrowed?—Quite so.

12732. But do you not think the fact that there is rigidity in claiming the payment of interest and capital is also a cause for the relative unpopularity of *taccavi*?—Of course it creates difficulties. The man would like a creditor who would wait longer.

12733. The rate of interest which the *sowcar* charges is often not so very much more than the co-operative organisation charges, is it?—It is about the same, about 9 or 10 per cent now.

12734. But, in the case of the *sowcar*, if the payment of interest is not forthcoming there is foreclosure and it is by the monetary advantage to the *sowcar* of such foreclosing that his business is mainly financed, is it not?—There is the additional reason that perhaps he has an eye on the land itself, thinking he can purchase it himself if the debt swells. That is why most of our *sowcars* are very often big landholders now.

12735. They foreclose and then present themselves as prospective buyers?—Yes, and if the land had not been mortgaged they obtain a decree and sell the land.

12736. So that even in the case of unsecured debt they manage to get the land in the long run very often?—Yes.

12737. You are not very hopeful at the moment about any lessening of the practice of sub-division by inheritance?—No.

12738. But you do think that something might be done to prevent that sub-division bringing about unnecessary fragmentation?—I am not aware of any methods.

12739. If the methods were purely voluntary, that is, if communities agreed, on co-operative lines, to attempt to mitigate the evils of fragmentation, do you not think that that is a perfectly safe direction in which to move?—It is rather difficult to induce our people to do it; fragmentation and partition are ingrained in our system; one finds it very difficult to keep the holding together.

12740. Of course it was evolved in centuries during which war, famine and pestilence kept the population down at very much lower levels than it now stands, was it not?—In ancient times there was no idea of individualism; there was advantage in being members of a joint family; but with English education and British administration we have acquired, to some extent, ideas about individual living and competition and things of that kind; they have a hold on our minds; the whole social aspect has changed.

12741. Any extensive reduction of the population as the result of any of these three calamities which I have mentioned would of course effect a considerable measure of consolidation by natural means?—Yes.

12742. So that in ancient days the scheme probably did not have so serious an effect, if indeed any, upon the efficiency of the agricultural system?—I should think so.

12743. But nowadays with a teeming population, both sub-division and the consequent fragmentation do, occasionally, proceed to a point where agricultural efficiency is seriously reduced. But your view is that the habit or custom is so ingrained in the population that it would be idle to attempt any positive remedy?—I should think so. There is one other point: We have, for instance, in Malabar less of fragmentation. In the district of Malabar the family property continues to be joint. There may be 100 members in it yet the land will be one unit.

12744. They share the produce?—Yes.

12745. But they leave the family property as one working unit?—Yes, the head of the family would manage it; not much advantage was derived from that; there is not much difference between the prosperity of the *Tarwad* and that of the individual in the East Coast whose land is only a small portion.

Sir K. V. Reddi Nayudu.

12746. Has that plan led to family strife in many cases?—There is a very peculiar law in Malabar, one man alone is in charge of the estate and he distributes what produce he thinks fit to the various members of the family.

12747. How does it work?—It has created its own difficulties and there is just now a law on the anvil of the legislature. The advantage of large farms is not recognised in this country because we cannot introduce machinery and things of that kind. The machinery is not suited to this country, and especially in my district there is no use for tractors. So that the disadvantage of fragmentation, and a disadvantage it no doubt is, is not so bad as it is believed to be. I do not know whether I have made myself clear.

12748. Perfectly; it is mainly manual labour, so that the fact that many of the fragments are too small for the use of modern implements does not matter so much?—Yes, even a man with 500 acres does not find it very convenient to have machinery and tractors.

12749. *Sir Henry Lawrence:* Is that in Malabar?—No, in my own district; men who have 1,000 and 2,000 acres never use machinery.

The Commission then adjourned till 10 a.m. on Saturday, the 20th November, 1926.

Saturday, November 20th, 1926.

MADRAS.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.
Sir James MACKENNA, KT., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU.
Rao Bahadur B. MUNISWAMI NAYUDU GARU.
} (*Co-opted Members*)

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH.
} (*Joint Secretaries.*)

Sir K. V. REDDI NAYUDU.

Further Oral Evidence.

12750. *The Chairman:* You say at page 349 on Fertilisers, " I am not aware of any faudulent adulteration of fertilisers of a serious character. Frauds, if any, are easily detected and that means loss of credit to the producing firm." That natural protection against adulteration does not, of course, apply to adulteration by middlemen or distributors, does it?—In one sense it does, because the producing firms always take care to see that their agents are reliable men. There is only one firm in this Presidency and their sales are not much. So in the beginning there is no chance of any frauds.

12751. So, from your experience you do not think that adulteration of fertilisers, in this Presidency at any rate, is a problem?—I do not think it is a problem.

12752. I should like to ask you a general question about agricultural industries, spare-time occupations, let us call them. How far do you think Government is justified in expending public funds in popularising part-time occupations for agriculturists?—I think Government would be perfectly justified in a country where most of the revenues come from the agricultural class. In fact, the bulk of the population is agricultural. Not merely is the land tax the largest tax in the Province. For instance, in my Province we have 7 crores from land revenue and 2 crores from water tax which is also connected with the land. The other taxes are also incidental to land. In a sense even the drink revenue comes mostly from the agricultural classes. Practically all the taxes are paid by the agriculturists and anything done to such a class as that would, I think, be the duty of the Government.

12753. That is on the question of equity as between tax-payer and tax-payer?—Yes.

12754. Now, as regards the soundness of the policy towards the agriculturist's improvements, would you agree with me that a broad test that you can apply to all these questions is that, if the industry that you are recommending is likely to be a sufficient success to stand on its own legs after a reasonable period of encouragement, then you are justified in going forward? —The industries that I suggested are not such as would compete with the rest of the world and the persons engaged cannot in the ordinary sense be said to be commercialists or merchantmen. They are just intended to make up, during the little time that these people have at their disposal, any losses that they may have incurred on account of a bad season or a bad crop. It is intended as a supplementary or subsidiary assistance.

12755. What I really meant was this. I presume that you do not contemplate a lasting expenditure of public funds or permanent annual expenditure of public funds, but rather some expenditure at the outset in order to popularise these industries?—I would be satisfied for the present with that.

12756. You must fix a limit to the amount of help that you are going to give?—Yes.

12757. On page 350 you say, "There is room for a decent coconut oil factory in the Godavari district." Why does not somebody start one?—Perhaps it is due to want of enterprise. Agriculturists rarely think of industries. Some initiation from Government, some help and incentive would be necessary in the beginning.

12758. Is it your experience that in this country there do exist openings which, if Government point the way, are taken advantage of, but if Government do not give the lead, nothing is done?—Practically, yes.

12759. Have you got any coconut oil factories in the Presidency?—Yes, on the West Coast we have; there is the Tata Company in Cochin and there is one in Pondicherry.

12760. The Tata Company does not lack enterprise as a rule, does it?—It does not; they have got enough funds. Unfortunately in this case there were some persons who did not work well and there was loss.

12761. Tata's Oil Works are losing?—They lost, 4 years ago, at any rate. I do not know the present condition.

12762. I want to ask you a question on a small point on page 351 of your note. You say that the cattle census, when used as evidence in courts of law, has caused immense mischief to individual litigant ryots. Is the statement accepted as preappointed evidence by courts in this country?—It is looked upon as a public document, a document prepared by a public officer in the discharge of his duties according to the Evidence Act; so it is used as evidence. The Census Report itself is not, but it is looked upon in another light altogether.

12763. Is that not sometimes traversed successfully?—It all depends upon the circumstances of each particular case.

12764. You mean individual hardship?—Yes.

12765. I do not know whether you wish to expand the information provided in the figures which you were good enough to hand in after adjournment last night?—I have only one or two remarks to make with reference to each of these statements.

12766. Perhaps I might say that statement No. 1 shows the amount spent annually by the Government of Madras on agriculture?—Yes. I just wish to point out that that is a very small proportion. For instance, the total revenue is 17 crores and we are spending only ·9 per cent of that.

12767. If you take the land revenue which is in column 3, it is 6 to 7 crores and the percentage spent on agriculture would not come to 3 per cent? —That is only to show that very little money is being spent in the Province on agriculture when we remember that the bulk of the revenue comes from the land; that is the first statement. As regards the second statement, it is a comparative statement of different countries. Whereas the United States of America are spending Rs. 1,681 per 1,000 of populatuion, we in Madras are

spending Rs. 24-6-0 and India is spending Rs. 33-10-8. I agree that populations differ. Our population is very large and the revenues of the United States of America are of course very large. All the same, I submit that Rs. 24 per 1,000 people is a small sum. I may now refer to the third statement; the paddy yield in Madras is only half a ton per acre; when we come to Spain it is about 2½ tons per acre. I may be wrong in my figures but these are the figures supplied to me by the Secretariat when I was in office. Italy has 1½ tons yield per acre. Considering that we have some of the best rivers in this country and considering also that our land is not poorer in quality than that of other countries, with the bountiful sun we have got, one fails to understand why we are producing so little. If science is applied, improvements are effected, new strains are evolved and all that should be done is done, then possibly our yield can be increased. That is, however, a matter for your investigation. I am just putting it as a point that has occurred to me.

12768. The outturn of paddy in Spain is about 2½ tons per acre?—Yes.

12769. What is the yield per acre in the United States of America?—It is four-fifths of a ton.

12770. Are you certain that that is not the 12 months' yield per acre whereas yours is the crop yield per acre?—The majority of fields in this country give us only one crop. It is only in the deltas and other places that two crops are raised, but the second crop is always unreliable.

12771. You have known this Presidency and particularly its agricultural life for a long time. Have you gathered that any change has taken place in the outlook of the rural population or in their standard of living?—I cannot say that any appreciable change has taken place; but I assume that, ever since the canal system was introduced, we have got undoubtedly a better standard of living but it is not as is to be found in other countries.

12772. Do you think there is a growing demand for a better standard of living; do you see any change in that direction?—Yes, I think it is practical human nature. I cannot say that my observation pointed it out to me, but something tells me that every man tries to live better than he is living at present. He wishes to have a better standard of life, better food, better clothing, better housing and so on.

12773. But you cannot say you notice any increase in the manifestation of that tendency?—No appreciable increase.

12774. Is it your experience that the Reforms of 1919, and the discussions in the legislature on agricultural subjects which have no doubt in this Presidency followed those Reforms, have had the effect of quickening public interest in agricultural questions?—No, except in a certain class which is more or less devoting itself to politics. I do not think the Reforms have touched the agricultural population.

12775. You do not think that there has been any stimulating of the agriculturists in this matter by the politically-minded class?—No, except a vague fear that something is wrong with the Government and things of that kind. Those ideas have been inculcated, I know, but they do not know what it is actually. People say everything is wrong with the Government and everything is wrong with the Legislative Councils and with the Ministers, but when they are asked what it is, nobody is able to say.

12776. That phenomenon is not confined to India, I can assure you from my own experience. You cannot tell me that you think the general effect of an increased interest in politics has been to quicken interest in agricultural affairs?—I do not think I can say that.

12777. Can you say that that same experience has had an influence in educating the intelligentsia, as it is sometimes called, in rural matters and rural economy?—My own belief is that the intelligentsia do not take any real interest at all in rural economics.

12778. Are they only interested in so far as those two things touch upon political values? Is that the point?—Politicians only take care of themselves. They want something which they call by various names, but they do not im-

part it to the villagers. The villagers' demand is only an ignorant demand; they do not know what it is that the politicians are asking for. I wonder whether many politicians themselves know what they are asking for.

12779. Do you think it would be a good thing if a University degree in rural economics were instituted?—I am not a great believer in the science of economics.

12780. Rural economics in its widest sense touching the general life of the cultivator, not systematised political economy applied to rural life; would a degree in that subject make any contribution towards a better appreciation of the rural problems by the intelligentsia?—I do not think it would serve any purpose. I would rather prefer the Minister in charge of Local Self-Government to have a scheme for himself of rural reconstruction for supplying each village with a school, a road, a library, a hospital, a recreation ground, etc. If a programme of that sort for a number of years is kept in view and carried out, it will certainly do more good than any such education which may be attempted.

12781. *Professor Gangulee:* How can you draw up a programme without any economic data?—Economic data are necessary, I agree; but for the purposes I am mentioning, I do not think any original economic data are required. For instance, I do not think it is absolutely necessary, for the purposes I am speaking of, to know what a man has got, what is his debt, what his property is worth, what his annual yield is, and so on.

12782. *The Chairman:* Are you influenced at all in that view by any opinion as to the merits of so called Western economics as applied to Indian conditions?—I have in my humble way tried to do some work in that line. When I was President of a Taluk Board I tried to get information from villagers; when I wanted to know what a cultivator paid for his cattle, he told me he paid Rs. 200 when he had only paid Rs. 100; when I asked him what his debt was he would not tell me his actual debt; he would put it at a low figure and being afraid of income-tax he would not tell us what his income was. So that there is considerable difficulty in finding out the true state of affairs.

12783. You have had much experience, and I want to find out whether by any educative means, either in the high schools or in the Universities, it is possible to render the educated class more sympathetic towards the needs of the rural classes?—Of course it must be admitted that education will do a good deal, but how far it is enough to change national characteristics, and how far immediate results can be expected from such education it is difficult to say. For instance, we have had University education for the last 50 years, and I do not think I can say that education has helped us in that way.

12784. It has been of the right type?—I do not think it has been. I have said in my note that the education we receive at present is not of the right type.

12785. You have failed to get education of the right type. You say that in this note?—Yes.

12786. That is as far as middle schools go; is it not?—I have said that after the middle schools some education in the professional lines, such as agriculture and industry, should be given.

12787. Do you not think it would be a good thing to carry that forward into the Universities and attempt to give learners at the Universities some education in and knowledge of agricultural problems and rural life generally?—I would limit University education to purely cultural purposes, that is, for the development of the culture of the individual. I would rather separate agricultural and industrial education from University education and utilise it merely as a means of making, if I may say so, two blades of grass grow where only one grew before.

12788. You do not think, for instance, that as a qualification for public service in departments other than the Agricultural Department a degree in rural economics in its broadest sense might be in the public interest?—I do

not think so, because I find that this economics would be very rarely required in the public services.

12789. Rural economics in its broadest sense, I repeat, is not merely the application of systematised political economy to agricultural subjects; I am thinking rather more of a broadly devised course on rural life and rural welfare as those are touched by the economic conditions of the country side?—I can only answer that the science of economics, both political and rural, is a new thing in my country; it is much more new here than in other countries. Unless I am sure of the particular curriculum I shall not be able to give an opinion on that.

12790. Do you agree with me that it is very important, if possible, to excite sympathy for and interest in the welfare of the cultivator in the minds of the educated classes of the country?—Of course it will be very desirable and very patriotic.

12791. Could you suggest any constructive measure by which this might be achieved? I am a believer in the theory that the desire to work for the people is instinctive and intuitive; patriotism alone can induce a man to work for his people?—Education alone, whatever shape you give to it, will not be able to achieve it. Unless people learn to be more patriotic than they are at present, they will not achieve anything in the sense of doing something for the people.

12792. And even in the case of the large landholders, there are very few who take an active personal interest to the same extent as the landholders in England do?—Yes, I am sorry to admit that, but I believe it is so. There are of course exceptions; some landlords do take a real interest in their tenants; but on the whole, the touch between landlord and tenant is very small.

12793. The tradition of a country life is not established in the same way in this country?—I do not know much about England; but I am afraid here it is not to the extent to which we are accustomed to read about as to England.

12794. And you can make no positive suggestions with a view to achieving those two *desiderata*, namely, wider interest on the part of the landholder in the business of the countryside generally and wider knowledge of and sympathy with the cultivators' affairs on the part of the educated urban classes?—I should think the first is almost an impossibility, because of the existing relations between the zamindar and the tenant. The tenant has very little to do with the zamindar nowadays except to pay his rent. All his relations are with Government, and the Government have taken all the powers of the zamindar; the zamindar has only to pay his *peish-cush* and receive what he gets from the tenant; permanent occupancy rights have been given to the tenant; the zamindar cannot eject him, that is not within his power. There is no corresponding relation between the two, so that I should think hereafter to expect any such interest on the part of the zamindar for the tenants is out of the question. As regards educated men taking interest in rural affairs and serving their countrymen by helping them to raise their standard of living, I think those things are possible, but I do not know whether under the present circumstances it will be easy to achieve.

12795. *Sir Henry Lawrence:* You have, I believe, visited Bombay on various occasions?—Yes.

12796. You have been able to compare the position in the neighbouring districts of Bombay with that of the neighbouring districts of Madras?—Very little; I cannot say I have much experience of the countryside; I have visited the city more often than the countryside in Bombay.

12797. Well, we have an idea that in Bombay there has been a considerable awakening of public spirit among people who represent the Taluka or District Local Boards, and that a good deal of public work is being done during the last few years. I gather you do not hold the same view in regard to your Taluk and District Local Boards?—No.

12798. Is there any special reason in Bombay to account for such a difference? Do you admit that there is such a difference?—I cannot tell that, unless I know the conditions in Bombay.

12799. You have seen something of them?—I did, but not enough to form an opinion.

12800. Were you not struck by any difference in the interest that the people take in local self-government?—Yes, and the work that is being done by the representatives of the people on the Municipalities and Local Boards. I do not think I can say there is much difference so far as I have seen, but I have not seen much of Bombay.

12801. You have seen nothing to cause you to take a pessimistic view. It is just the difference between an optimistic and a pessimistic outlook, is it? —I cannot answer that question; it of course depends upon the temperament.

12802. We were told by a witness yesterday that in Bombay people are generally richer and among the agriculturist and industrial classes there is a higher standard of living?—I cannot agree with that proposition. If you take the cities it is all right; but I think the Deccan ryots are much poorer than our ryots; as a matter of fact if I can judge them on the one or two occasions I saw the houses they live in, the food they eat, and the dress they wear, and the very look of the men, I should certainly think that the Madras ryot is far better off than the Deccan ryot.

12803. That is a very interesting point of view. Is the standard of wages higher in Madras than in Bombay?—I cannot tell you because I do not know the wages in Bombay. I know the wages here; if you can tell me what wages the ryots of the Bombay Deccan get I may be able to say.

12804. *Sir Ganga Ram:* Can you say what the agricultural wages here are?—It ranges from Re. 0-6-0 to Re. 1; it rises to Re. 1 in the season; in the off season it ranges between As. 6 and As. 12.

We were told yesterday that it was 2 annas.

12805. *The Raja of Parlakimedi:* That is, in the Agency tracts; they are hill tracts, where labour is not at all needed?—I was referring to the delta tracts; I come from the Godavari district.

12806. *Sir Henry Lawrence:* In your statement you say that one of the causes that are unfavourable to the ryot is expenditure on drink?—Yes, the lower classes.

12807. Only the lower classes?—Yes.

12808. What proportion of the families in Madras you would suggest have the drinking habit?—Almost all the labouring classes, and a few amongst the tenants, that is, those who have only small holdings.

12809. Would you put that at one-third of the population?—I have not thought over that matter, but considering that we get 4 to 5 crores of rupees from the abkari revenue I think it ought to be a little more than that.

12810. Rather more than one-third?—I am not sure because I have never calculated it.

12811. Have you got no figures at all to show what proportion of your total population is given to drinking?—I do not know of any; probably the Excise Minister will be able to answer that. I was not in charge of that department.

12812. Do you think it would be something less than half the total?—I should think so; it is a pure guess.

12813. Your excise revenue, you say, is about Rs. 5 crores?—Yes, about 5 crores.

12814. The Government take a very large proportion of the price for a bottle of country liquor, do they not?—Yes.

12815. Can you tell me what proportion that is?—I cannot.

12816. Will it be five-sixths or nine-tenths?—I have no idea.

12817. In Bombay it might be about four-fifths?—Yes.

12818. In this Presidency, presumably, it would be something similar?—Yes.

12819. So that the total expenditure on drink would be in the neighbourhood of 6 crores?—Probably.

12820. And your population is about 4 crores?—Yes, 41 millions.

12821. So that, roughly, the expenditure per head is Rs. 1-8-0; have you worked that out?—It was worked out, but I do not remember the figure exactly; it must be somewhere about that figure. Some time ago, this Government was complaining that our abkari charges were more than in other Provinces, and that we were paying more per head.

12822. I just want to arrive at some idea of the figure that the people expend?—Yes.

12823. That is Rs. 1-8-0 per head; that represents 2 annas per month, does it not?—I have a vague impression that Sir Charles Todhunter put it at Rs. 2-12-0. I do not know whether he is referring to this figure, but I have some impression of that kind; it is Rs. 2-11-0 if I am not mistaken.

12824. Per what? Per head?—Yes, per head.

12825. For the year?—I should think so.

12826. I want to get a figure which represents the expenditure of the drinking man in the drinking family. You have never worked that out?—No.

12827. You make the general statement that it is a substantial contribution to the debt or poverty of the ryot?—Yes, a general observation not based upon any of these figures; a general impression that in the lower classes money is being spent on drink which they might have saved and used for better purposes.

12828. You can give us no further indication of what the total amount is in a drinking family per head?—No.

12829. On the question of emigration, are you acquainted with any men who have emigrated for a period and have returned to this country?—The people of my district go mostly only to Burma.

12830. Which is your district?—The Godavari district in the Northern Circars; the people from the delta, that is the lower classes, the toddy drawers and the depressed classes, go to Burma and come back.

12831. Do they improve their economic position by going there?—I should think so, because I found some of them bringing money from Burma and purchasing lands here.

12832. Were those the depressed classes?—Some of them; the class called the *Shettibalijas*, corresponding to the toddy drawers, is more improved than others.

12833. They are not untouchables?—They are not; but I know of *Panchamas*, who are untouchables, going to Burma and coming back with a little money.

12834. Do they come back with an improved standard of living?—I cannot tell that, but I know they are better off in circumstances; they own land, and they possibly dress better than their fellows in the village.

12835. Do you find any difference in their moral standard or in their outlook on life; are they more ambitious; do they cause any trouble in their villages?—No, they do not cause any trouble that I know of.

12836. So that, on the whole, this emigration is beneficial?—So far as Burma is concerned, I should think the people are improved, they are better off for it.

12837. Have you any views on emigration to other places, to Ceylon?—No, except what we read in the papers; the Assam troubles and the Ceylon troubles are common property now. There is a vague and general impression

in the country that something is wrong with the means by which this emigration takes place, the *Kanganis* play false and there is another vague impression that something is wrong in those places, that they are not well treated and things of that kind, but I have no evidence to go upon.

12838. Nothing more than the vague impression that the Ministers are not doing their job?—No.

12839. Do you think that those conditions of emigration could be improved?—I have not studied that question at all, but I have that vague impression, again, that something better could be done.

12840. Is emigration permitted to other places overseas?—I thought it was stopped, (was it not?) to Fiji, Mauritius and other places.

12841. It is completely stopped, is it?—I cannot definitely tell.

12842. *Professor Gangulee:* Not completely; indentured labour is stopped by the Act of 1922?—Something of that kind happened; so far as I know, many people are not going from this country to those parts.

12843. *Sir Henry Lawrence:* If it is not prohibited, it is at any rate discouraged?—Yes.

12844. Do you think it is rightly discouraged?—Well, it is right in places where labour is sparse, but if there are districts where there are more men than we want, I should certainly be glad if some of them go out and come back with a little money, provided of course they are better treated there.

12845. Do you think that would be the general view of educated opinion in Madras?—At least those that belong to my school of politics think like that.

12846. How would you label your school of politics?—I am known as a Justicite. We have in Madras the Justice party, the Swaraj party and the Congress party.

12847. Those who hold with you would take that view?—Yes, I should think so.

12848. *Sir Ganga Ram:* May I ask you, first of all, a personal question? You say you belong to the zamindari class?—No, I have never said that; I belong to the agriculturist class; I am a farmer's son.

12849. That is what I mean; have you any lands?—I have.

12850. How much?—About 200 acres.

12851. In the Godavari district?—Yes.

12852. You also lease land to the tenant?—Yes.

12853. Then, you do not suggest that the land can ever be regarded as a profession, or that agriculture can be made a profession. I understand that all the people here who own lands, as soon as they become a little educated, come to the High Court to practise?—Yes.

12854. They leave the land to tenants; in that case, what improvement in agriculture can you possibly expect?—Well, not from these educated classes surely, but from the others; I am only perhaps one in a million.

12855. Are there a million landholders here who own large areas of land?—Not large areas, but they own small areas.

12856. What area of land would you consider sufficient to attract a man to agriculture as a profession, so that he would not go to practise in the Courts?—In my district 5 acres.

12857. For the educated classes, how much would an ambitious educated man require? I understand that you are owning 200 acres, but you do not consider it worth while to settle on the land?—I can.

12858. How much land, do you think, would attract an educated man?—It is not merely a question of the extent of the land; the educated men think that there are careers open to them, which will be more dignified.

12859. It is the amenities of life that they require, is it?—Yes; we are accustomed to town life, which we do not find in our villages; we want society, newspapers, discussions, politics and lots of other things.

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12860. You cannot suggest any constructive scheme by which agriculture can become a profession amongst the rising generation?—It is a profession, but it is not the profession of the educated classes.

12861. But people are getting educated; the craze is now for educating everybody; do you mean to say that agriculture will go to the wall then?—It will never go to the wall, because there are always a sufficient number of men in the village and in the fields to look after it.

12862. Do you mean uneducated people?—Uneducated or halfeducated.

12863. I understand you were Minister for three years?—Yes.

12864. Did you ever represent to Government that they are spending only 1 per cent of the revenue on agriculture?—I have done that all my life. These figures were taken from a speech which I made defending the policy of Government, and asking for more money when the opposition wanted a lump sum cut of Rs. 2 lakhs out of the provision of Rs. 14 lakhs.

12865. Did you represent to Government all these views that you have given us in this memorandum?—It was not necessary to represent to Government, because I was part of the Government; I had to represent to the Legislative Council, and I did so speaking in the Legislative Council.

12866. Under the head of Irrigation, you give a lot of figures; are you quite certain of your figures?—I must apologise to the Commission, for this reason. I was engaged in the elections till the 8th of this month; I did not see the Questionnaire; I did not receive any notice of it personally myself; I arrived here on the 10th, and I had only three days to prepare my replies; I will not vouchsafe for the correctness of these figures.

12867. I see that there are three or four projects for irrigation on the anvil of the Legislature; the one you mention is the Mettur project; that, you say, has been sanctioned?—Yes.

12868. And the work is going on?—Yes.

12869. Is that project a productive or protective one?—It is put under productive schemes.

12870. How? Six crores at 6 per cent means 36 lakhs; divided by 3 lakhs it means Rs. 12 per acre; do you think the landholder will ever be able to pay Rs. 12 an acre? Then you must also add the working expenses at 25 per cent at least; that means Rs. 15 an acre?—Yes.

12871. If Rs. 15 an acre is to be charged to the landholders, how can you call it productive?—There are people who are prepared to pay even higher rates. I remember in the Legislative Council a member from Coimbatore saying that, if what is known as the Bhavani project were carried out, there are people who would be prepared to pay even Rs. 40 an acre.

12872. Then your whole difficulty is solved. If you charge the people who use Government water at the rate of even Rs. 10, you make at least Rs. 10 crores?—In a general form like that, it is rather difficult to work out; each scheme will have to be taken by itself of course. Government would construct these productive works, provided it came within their standard. Sometimes, people who have no other means of growing crops may be willing to pay a higher rate.

12873. Have you ever consulted these people whether they are willing to pay Rs. 15 per acre?—No.

12874. Have Government consulted them?—I should think so.

12875. What is the acreage rate for water?—I am not quite sure of the figures.

12876. You say it is 6 crores; I say at 6 per cent it means 36 lakhs; add to that 25 per cent for working expenses, that means Rs. 15 per acre?—Yes.

12877. Are the people willing to pay so much? If people are willing to pay so much, every protective work becomes productive?—No doubt, it does.

12878. You were telling me about the Bhavani project. I saw some figures in this morning's *Madras Mail*, and according to those figures it comes to

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Rs. 15 an acre, and if you add the working expenses it comes to Rs. 20; with regard to the Bellary West Canal project, it will come to Rs. 90 an acre, which means Rs. 100 an acre including the working expenses; Rs. 90 lakhs is going to be the cost for a project to irrigate 57,000 acres. Can you suggest anything in that? Is it true that these figures are correct and yet, with these figures before you, you would call these projects productive?—I thought you were questioning me as to the correctness of my figures; I think they are correct in the sense that I have taken them from the speeches of two responsible Ministers and Members of Government. On the whole, I can claim them to be correct.

12879. That is how it works out. All I ask is, what is the future of the Madras Presidency as regards irrigation if irrigation projects like that make the people pay Rs. 15?—I do not advocate the payment of Rs. 15 at all. On the other hand if you have seen the other paragraphs where I question the policy of the Government I suggested that the 6 per cent rule ought not to be enforced.

12880. Then what should be enforced? The Government credit is now only 5 per cent?—Yes.

12881. Perhaps when the Secretary of State laid that down it was 6 per cent. You think that Government should give the money at 2 per cent and let the general tax-payer pay the rest?—I should think so; yes, it comes to that, probably. I said that this rule ought not to be enforced but that they must be prepared to suffer a certain amount of loss.

12882. Loss from what source?—The general tax-payer's money.

12883. The general tax-payer has to pay the money for the benefit of the agriculturist?—Yes, because it will improve the national wealth and will improve the food supply of the country.

12884. You say that teachers should come from the agricultural classes. Is there a caste of the agricultural class. Will you define the agricultural class?—I understand it in the sense that all those who are engaged in the profession of agriculture belong to the agricultural class.

12885. When you talk of the teachers of that class what do you mean by that? A man whose father was an agriculturist, but who himself has never done any agriculture?—I drew a distinction between the Brahmnis and the high caste Non-Brahmins who do not actually concern themselves in cultivation. The teachers come from that class and even the boys are coming from that class at present. My idea is that both the teachers and the boys should come from that class.

12886. Properly speaking what I learn is that the depressed class is the only class which is to be considered as the agriculturist class generally?—I will not accept that at all. I belong to the agriculturist class. My father and forefathers belonged to the agriculturist class and my brothers and brothers-in-law are tilling the soil to-day.

12887. Why have you not made agriculture a profession? Why go to law? —Because I find law more profitable.

The Chairman: You are not speaking for the whole Commission, Sir Ganga Ram, when you say that we learn that the depressed classes alone are the agriculturists. Some of us did not at all gather that yesterday.

12888. *Sir Ganga Ram:* When you say first crop and second crop, do you mean from the same field?—Yes.

12889. Do you take two crops always?—In some cases; not always. In the delta some lands are given what is known as a turn, or the closed canal and the open canal as they call it. They give us water for some fields. One section gets it and another section does not get it.

12890. *Sir Thomas Middleton:* I see from your précis that you have taken a great personal interest in the Agricultural Department. You have yourself selected the young men who went to the Coimbatore College but at the end of their course these young men disappointed you by seeking Government service?—They did.

12891. What remuneration would they get in Government service? How much a month?—After the college course, I suppose they start on Rs. 80 or 90 a month as Demonstrators.

12892. How many acres of land in your district would one of these young men have needed in order to make Rs. 80 a month from their improved education?—20 to 25 acres.

12893. Twenty to twenty-five acres? I think you must be estimating the gross proceeds from 20 to 25 acres. Remember that in order to get value for his education he has to increase the value of the produce?—Yes.

12894. He would have to be a very clever man to get that from 25 acres? —Yes. I see the mistake; it ought to be fifty acres.

12895. How many of these ordinary college students could command 50 acres?—Very few.

12896. Then may I put it in this way, that the college student is a believer in economics and that you are not?—Very likely.

12897. Is that the explanation, do you think?—It is possible. I do not put it on that ground because I think I can claim a certain knowledge of our people. The one desire of the people is the belief that there is dignity and power in office, which they do not get when they are on the land. Circumstances have so conspired for the last 40 or 50 years. For instance, a Revenue Inspector on Rs. 30 or 40 is much more respected than a landholder with 200 acres or with 1 or 2 lakhs to his credit. That man has to get up and salute the Revenue Inspector when he passes. We have things which you never find in any other country. All that means that people have been drawn away from the land.

12898. I appreciate that difficulty. Now, is there any organised attempt to combat that feeling in the students' mind?—Yes; I should think so. Our own party, the Non-Brahmin party in Madras, has been trying its level best to remove these difficulties.

12899. You point out very clearly the rate at which unemployment is increasing among graduates?—Yes.

12900. You say, "Their education," that is, the University students' education, "having been designed and imparted with a view to make them fit to be clerks and officials." Now I ask you the question, has it been designed for that purpose?—It is difficult for me at this distance of time to say what the original design of the original framers was; but it turned out to be the fact. They wanted men; there can be no doubt about that. The early officials and authorities of this country wanted some medium by which they could carry on the Government.

12901. I am aware that 70 or 80 years ago there was this definite policy; but I was under the impression that in the interval the policy of University bodies had been entirely modified?—There was a change in 1904 and recently in our own Province during the first Ministry and the second Ministry; but not much change has been effected by these new Acts.

12902. Having that statement of yours in mind, I was very much surprised to hear you say that you yourself would confine Universities to cultural subjects?—Yes.

12903. And that you would employ, shall we say, technical high schools or technical institutions for all other subjects?—Yes.

12904. Is it your view that agriculture for example or engineering may not be a cultural subject?—From University education I would not exclude that at all. I would leave the engineering side of it, the scientific side, even the agriculture side. That ought to be done by the University. I was only thinking of the requirements up to the age of 16. Those of course that are fit for scientific education, for engineering and other sciences, certainly will have to go to the college.

12905. What I wanted to get your view on is the proper University policy to adopt for a set of conditions such as we are faced with. Would you approve

of Universities introducing, so far as they go, such subjects as engineering, commerce, agriculture, as has been done in the Universities of Europe?—Yes.

12906. You would approve of that and would not confine Universities to literary subjects?—No. In culture I would include the higher sciences, whether they be agriculture or anything else.

12907. I wanted to make quite clear what your intention was. You make a very interesting suggestion about the selection of 10 per cent of the boys from rural areas?—You need not take the figures exactly at 10 per cent. I meant only to say a certain proportion.

12908. Is it to be a certain proportion in all the rural areas of the Presidency or would you go from area to area and fix a number to be taken from that particular locality who could be allowed to enter the higher institutions? —I do not think that I would give any attention to that. Particular areas were not in my mind at that time, but I suppose when it comes to a question of practical working out, some such thing has to be considered.

12909. I tried to work out the matter practically and I was at once up against this difficulty of how you are to decide what boys are to go forward? —The headmaster of the school can certify that they are fit.

12910. Headmasters differ in knowledge, experience and quality in every taluk. How can you get the headmaster to certify?—I quite agree but my difficulty was this. Some step has to be taken against what is going on just now; this is only given as the basis; I may be wrong and better schemes might be conceived. But I was only driving at this, that the present system of education must cease and something more practical and more useful to the country adopted. Probably I was wrong in giving the percentage.

12911. I agree with the object which you have in view, but I cannot see how the methods would work out?—I see the difficulty.

12912. Can we, in practice, get away from the old and despised system of examinations?—Well, there were days when there were no examinations and I believe that even now in some cases where diplomas are given they are not merely based upon examination but on the experience of the teacher of the boy in the class and what he knows and sees in the boys.

12913. It is an easy matter when you have a small number but it is a matter of some difficulty when you come to deal with all the children of the Presidency. How can you do that?—I see the difficulty.

12914. You say in quite another connection "I do not know of any non-terminable mortgages in this Province. The old saying 'once a mortgage always a mortgage' is true in this Province." Have you never heard of a sinking fund in this Province?—Not in land.

12915. Is there any reason why that method of repayment should not be introduced?—It has not been in vogue here. I know of no case of that kind.

12916. *Dr. Hyder:* I find on comparison that your figures are quite correct, 3 lakhs?—Yes.

12917. I understand you are not satisfied with the loan policy followed by the Government of Madras?—I am not.

12918. You say that the six per cent rule stands in the way and you want to abrogate it?—Yes.

12919. I should like to go into that question. There is scope for irrigation here in this Presidency?—There is.

12920. You say financial difficulty stands in the way?—And the policy of Government.

12921. Take the Mettur project. Suppose after deducting the working expenses the project is not expected to return 6 per cent, your view is that if the policy were rigidly followed that project would not be constructed?—Yes.

12922. But I think the Government could not depart from the policy laid down in the Report of the Indian Irrigation Commission, because there are a number of other things which ought to be taken into account. I do not

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know what arithmetical calculation has been made. Taking into account the area that will be irrigated, I suppose this Mettur project gives only a return of Rs. 3-8-0?—We will assume that and proceed.

12923. Then with reference to the indirect charges, I want to draw your particular attention to a chapter in the Indian Irrigation Commission's report where it is said that these indirect charges vary with the nature of the project?—It is some time since I read the report, probably 8 years ago.

12924. I will tell you the substance. Indirect charges will vary with the project? If the project will yield much there will also be an indirect increase in the revenues of Government; if the direct yield is small the indirect yield also will be small; taking Rs. 3-8-0 as direct yield and 25 per cent as the indirect yield that will give Rs. 4-8-0. Then this project would remain not unconstructed. But there are one or two factors which if brought to the notice of the Government would lead to construction, leading to an increase in resources and the avoidance of cost entailed in future measures of famine relief. If those factors were taken into account and the factor of increase in the future resources of the country were also taken into account I think many of the projects which at first sight seem unproductive would become productive?—Yes.

12925. I want to know if that matter has been threshed out in the Legislature of the Madras Presidency? Not in that light. But the general run of the members of the Legislative Council will almost be of the same opinion as myself, that the Government policy is too rigid and that a little loss need not be feared; that the incidental advantages, what you call indirect advantages, would outweigh such disadvantages as additional expenditure that the Government may have to incur.

12926. Both as regards famine relief and the probable increase that may take place in the resources?—And also the capacity to bear additional taxes in other directions. If it is worked out like that, probably there will be many projects which might be taken up.

12927. With reference to the question of a philosophical nature put by the Chairman I was wondering what your answer was. Is there any desire for better life?—It is human nature to desire, but how is that desire to be achieved?

12928. The only class among which there is the desire for a better life is the educated class?—That is the audible one, if I may so put it.

12929. What is that due to? Is it due to Western influence?—Yes.

12930. If the mass of the people were brought under Western influence you think that they would also have a desire for better life?—I should think so.

12931. At present they have not made any such demand because they have not been brought under Western influence?—Not many of them.

12932. Did any of the sappers and miners who returned from the War have a desire for a better standard of living?—None of them returned from Flanders, and as regards those returning from Mesopotamia they found no new ideas there.

12933. What is the attitude of these people? They had been to other countries. Do they not desire a better life?—I have not come across them. Possibly they are glad they came back with their lives and brought a little money. Their stay in Mesopotamia was very short.

12934. Now in regard to the Farm Loans Act of the United States, I was wondering whether you could briefly enumerate the chief provisions?—Well, I would prefer to supply you with a copy of it. There are 12 States. A certain sum of money is earmarked for a particular purpose. The co-operative societies collect by debentures being issued and the co-operative bank of each State stands security for the debentures of the other 12 banks.

12935. I was wondering whether the State Government and the Federal Government were effectively helping from the financial point of view the

formation of these banks?—I would not like to express an opinion without the Act before me.

12936. *Dewan Bahadur Raghavayya:* What is the attitude of those officials of the department which has most to do with the ryot population and the agriculturist. It is not hostile, I take it?—It is not hostile. So far as the Agricultural Department is concerned they are very sympathetic. They have been trying their best to improve the condition of the ryot.

12937. Officials of the Revenue Department?—It is a matter of indifference to them so long as the revenue comes in.

12938. Do you agree that this is due more to their ignorance or want of knowledge on matters of rural economics. If these officials instead of themselves being ignorant had a knowledge of rural economics they could and would throw out suggestions for the improvement of the agricultural population, could they not?—They are fairly well educated men. They are all graduates of the University. Just like myself they are not versed in economic science.

12939. And a better knowledge of rural economics in particular would help them considerably in helping the ryot to earn more?—I cannot say because it has not been tried and experience has not shown.

12940. Do you think it is worth trying?—I am afraid it is a difficult question to answer. It is difficult to say. In this Province at any rate it has not been tried and I have no precedent or previous experience to say whether it will succeed or not.

12941. *The Raja of Parlakimedi:* Considering the size of the Presidency would you not advocate another college for the Northern Circars?—Certainly, yes.

12942. Where would you like to have a college?—At Samalkot; it is my district.

12943. Would you select a site a little north of that, Vizagapatam?—No, because Samalkot is nearer to the other districts and the Ceded Districts will be far away from Vizagapatam.

12944. It will be a compact area?—We have got other difficulties; we have delta cultivation. For garden cultivation your district is quite good, but there is no delta cultivation. It is nothing like the one at Godavari.

12945. It has not been possible for the department to pay attention to that part of Madras?—It is not the fault of the department; Government do not provide funds.

12946. As regards middle schools and high schools, have you got a comprehensive supply of vernacular books?—I cannot say. I remember the Director sending me one book which I was never able to get through. We have no text books at present. I think the department is trying to get some books prepared.

12947. Vernacular will be the medium in those middle schools?—Yes.

12948. It was not popular because boys did not have proper books and so on? —I cannot say. Perhaps what they want is more training on the field than actual book reading.

12949. Have you visited one of these schools?—I visited both these schools at Taliparamba and Anakapalle.

12950. Is practical work incorporated in the curriculum?—That is the most important portion of the work.

12951. Were they taught to work?—They were taken to the field and made to work there.

12952. As regards your remarks about the present curriculum of teaching in different schools and Universities do you think that unless the public are made to feel that it is time to take to these agricultural avocations and unless they insist upon boys taking to this sort of education, much can be done in reforming the present curriculum followed by the University?—Well, I cannot tell. If

I have followed your question correctly, is it that the time has not yet come and there is no public demand for any such change as this?

12953. There is a demand. But the need is that the country people have not yet understood fully that they should not hereafter stick to Government employment but that they should go back and work on their fields and recognise that labour is just as respectable as office work?—I quite agree. Possibly we are in the transition period. In the next decade they will feel it.

12954. Do you think anything is being done to popularise the idea to change to that way?—I think, as they say, the test of the pudding is in the eating, and when they find that investment has no return they will take up this.

12955. There is no particular body tackling the question?—No; none that I know of.

12956. As regards irrigation in the Godavari canals you say there is still land for irrigation. Are they cultivable areas?—Yes, cultivable areas.

12957. May I know what is the obstacle in the way of irrigating them at present?—The original delta system was intended for about 6 or 7 lakhs of acres; we have already reached 8 lakhs of acres, and the P. W. D. authorities are afraid they may not be able to supply water unless it be by a remodelling scheme which involves the taking of the canals to higher lands. Then there is the further difficulty of water in the river; at present the level is 3 feet; the proposal is to raise it to 6 feet. If the remodelling scheme is put through then higher lands will be irrigated.

12958. With this improvement, will it be possible for those areas to raise second crops?—Yes, as a matter of fact at present a second crop is not allowed on all plots; if one section is allowed the other section is not.

12959. The whole area will be under a second crop?—Very nearly the whole; of course some fields are unfit for second crops.

12960. All others can be cultivated with a second crop?—Yes.

12961. Even these additional lands?—I do not think so, because they are higher lands.

12962. Have you at any time taken a personal interest in the cultivation of land?—I do take some interest in it whenever I go to my fields. If you mean to ask me if I have ever held a plough, I must say no, not that I am ashamed of it.

There is nothing to be ashamed of. I may tell you I have done it myself.

12963. I want to know what acreage of paddy cultivation one man can cultivate himself?—I think 4 to 5 acres would be quite sufficient.

12964. For a field labourer?—It varies; if the land is of a common level it is always at an advantage. The larger such area the better it is; the water will spread evenly.

12965. That depends upon the power?—Water-supply?

12966. Water-supply as well as animal power?—Yes. Four acres will be a good thing if they can be divided into plots of one-fourth or one-eighth of an acre.

12967. Are you following the methods advocated by the department for manurial purposes as well as their methods of improved cultivation?—I should think so.

12968. On your fields?—No; I lease out all my land.

12969. Do you persuade the cultivators?—We do, so far as planting single seedlings are concerned; they used 5 to 6 *putties*, and now they use 2 to 2½ *putties*.

12970. If the seedlings are stout enough the transplanter automatically does transplant single seedlings?—It is not merely in the seed bed itself; when they took to transplanting they used to transplant in bundles, but now they put in one or two.

12971. Have you tried any manures in your fields?—You mean my own fields?

12972. Yes?—No.

12973. Potash manures or green manures?—I know they are used, but I have not used them myself, because I have leased out my lands. I know these green manures have given excellent results; I am referring to what you call *jeelinga.*

12974. How much do you get by lease?—For coconut gardens I get Rs. 75 to Rs. 100; for paddy fields Rs. 50 to Rs. 60; there are other lands which are not so profitable as those.

12975. Of course you are convinced about the increase in yields when you apply these manures?—Certainly.

12976. Do you not think you should induce the ryots to take to these improved methods of cultivation?—I have done my little bit in this direction. We issued pamphlets; the issue of the pamphlets that the Director of Agriculture referred to was partly due to me; I got some of them translated into the vernaculars.

12977. If you apply those methods practically in your fields it will serve as a demonstration to the neighbours?—It will, certainly.

12978. *Sir James MacKenna:* What are your views regarding the training of Indians for the superior posts in the Agricultural Department?—They will do quite well.

12979. I want to know how you think they should be trained?—I would take graduates of our University here, give them practical training in office for three or four years, and then send them to foreign countries to study for one or two years.

12980. Graduates of the University, in what subject?—Graduates in agriculture.

12981. You mean graduates of the Coimbatore College?—Yes, and send them over to foreign countries.

12982. You would give them some training here before they go, and then send them to a particular foreign country where they can get the required training?—Yes.

12983. So that they would get a little field training before you send them?—Yes, unless the boys themselves come from agricultural families; and even in their case some short training would be necessary.

12984. I am very much depressed by the gloomy view you give of the people of Madras?—In what respect?

12985. With reference to the lack of public spirit and the lack of a desire for public service. My experience of the people of Madras in a Province where they are very numerous, is that they are ambitious and very adaptable. Is there no other solution or no prospect of any public life amongst the lower classes of the Madras Presidency beyond going to Burma?—The only other thing is what I was speaking of, namely that Government should take some interest and see that they are better educated and better provided with the amenities that I spoke of.

12986. But you do not believe in education?—Still it has its own place.

12987. Why should Government waste its resources? Is not public spirit a self-growth; has it ever been encouraged by Government?—I do not know.

12988. It must come from the people themselves?—Government, I suppose, do not attend to it.

12989. Government is a mere machine?—I am reminded of the saying of General Booth that Government officers are not only hard of hearing but also dumb.

12990. *Professor Gangulee:* You are a large landowner?—I do not know whether you can call it large, but I have given you the extent of my holding.

12991. And you have leased out your land?—Yes.

12992. Can you give us an idea of how many tenants you have in this holding?—Say about 20.

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12993. You are insterested in the development of the agricultural practice of these tenants?—Yes.

12994. Have you started any agricultural farm in your estate to serve as a model farm?—No. May I tell you that all these acres are distributed over various places?

12995. In order to introduce agricultural improvements you have not started any demonstration farm?—I have not.

12996. Have you invited any Demonstrators from the Department of Agriculture to your estate?—There is a Demonstrator in my district, and he generally goes over those parts.

12997. And you are in touch with him?—I know him.

12998. Did you observe a change in the agricultural practice?—There is a little change.

12999. In what direction?—For one thing, in transplantation by single seedling; then in regard to sugarcane crops they are adopting methods which are practised on the farm at Samalkot.

13000. You mean ridge-planting?—Ridge-planting, cutting of the crop and various other methods.

13001. Do you take any share in the introduction of those improvements?—I did not, except what I did as a Minister; I do not claim that I did anything as a private citizen.

13002. Before you took office as a Minister of Agriculture, you did not take any direct interest in agriculture?—None that can be mentioned here.

13003. Before taking office as Minister of Agriculture did you pay a visit to the Coimbatore Agricultural College?—Yes.

13004. In what connection?—I went to Ootacamund and when there I paid a flying visit just to see what was being done there, as a sightseer.

13005. In this memorandum you have not told us anything about the condition of the cattle in your district. Are you in touch with the work being done in connection with that?—I know something about it.

13006. Are you in touch with the scientific cattle-breeding experiments being carried on by the Agricultural Department?—I know something as a Minister, but not in my private capacity.

13007. You have devoted some considerable attention in this précis to agricultural education; at page 345 you say that one of the agricultural middle schools started by you, perhaps when you were Minister, has not attracted a sufficient number of students to keep it going. Have you tried to find out why these vernacular middle schools failed to attract students?—I did not investigate it; by the time it was known to be a failure, I had ceased to be a Minister.

13008. And since you ceased to be a Minister your interest ceased?—As Minister it ceased but as a citizen it did not cease.

13009. On page 345, you say "While I was Minister I insisted upon boys being drawn only from those classes." Do you wish to close agricultural education to any other classes? For instance, do you hold the opinion that a Brahmin should not be educated in an agricultural college?—Yes, because there is a sufficient number of boys of that community who are turned out by our Agricultural College.

13010. So, you would see the Agricultural College run on a communal basis?—No, on a class basis. I have also mentioned the Non-Brahmin upper classes as well as the Brahmin; I wonder whether you have noticed that. I think both these classes receive agricultural education only to enter Government service. We must have persons who will acquire the knowledge to utilise it in their own fields and not merely for the purpose of obtaining appointments under Government.

13011. The Agricultural College is a public institution?—It is.

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13012. Can it close its doors to anybody?—I do not say it ought to close its doors to anybody.

13013. Now, with regard to the excellent advice you gave, namely that the students should go back to their farms and utilise there the knowledge they acquired in the college, can you suggest in what way they could utilise their knowledge in their fields?—In this way: we took only those boys who had got land of their own or whose closest relations had land and we obtained a promise from them that they would go back to the fields belonging either to themselves or to their close relations who would admit them to their fields. It was on that promise that we admitted them to the college.

13014. Supposing your son was sent to the Agricultural College, he would certainly say: " Yes, my father is a big landowner," and yet you have not got an acre of land with yourself; you have leased out all your land?—Yes, but that is only for a year or two; I can get back my lands in a day.

13015. You say: "There is no incentive other than public service which induces lads to study agriculture," and I understand in answer to a question by the Raja Sahib you said that you recommended another agricultural college; do you think there is a demand for it?—An agricultural college also associated with the agricultural institution; there is the research institute along with it and there would be boys in the Agricultural College coming from my parts. The conditions differ to a certain extent, that is, the conditions on the West Coast and on the South are different from the agricultural conditions in the Northern Circars and in the Ceded Districts; no doubt, it may be expensive but still it is worth having.

13016. It is not a question of expense; you say that public service is the only incentive that these boys have, and public service of course has certain limits?—That depends on whether hereafter the boys will be the same. We are thinking of the agricultural boys joining these schools and colleges and trying to utilise their knowledge on their own fields.

13017. During the time that you were Minister of Agriculture, did you think out any practical step that might be taken towards establishing agricultural colonies, or settling agricultural graduates on available culturable land?—No. there is not much scope for that in this Province.

13018. Have you any idea of the extent of land available?—In name you have got about a fifth of the Province; I believe the culturable land is 80 per cent; and 20 per cent is either waste land or saline land, or rocky soil, and things of that kind.

13019. You say there are one or two limiting factors in every case?—Yes.

13020. In one case perhaps water, and in another case saline deposits and so on?—Yes.

13021. You do not think that through scientific investigation you can find a way out of it?—You can find a way out of it at enormous cost, which does not pay.

13022. On page 346 you say, " This industrial and agricultural education must be made compulsory ", are you advocating compulsory agricultural and industrial education?—I am advocating agricultural education until the age of 16.

13023. Not general education?—My general proposition is that education should be compulsory until 16 years, but I want that the sons of the agriculturists, who are not fit for cultural education, should also be compulsorily educated in agriculture.

13024. This idea of yours about compulsory education is not quite clear to us. You say this industrial and agricultural education must be made compulsory until the age of 16; that is, boys must not be permitted to study in any other schools; in this one sentence you have condensed the whole idea on compulsory education?—I need not discuss the point here.

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13025. With regard to drink, you say that among the lower classes the drink evil has spread; have you any statistical basis for making that statement?—No.

13026. In the Excise Administration Report, I find that in 1915-16 the consumption per 100 of population is 3·7 proof gallons of country spirit, and in 1924-25, 3·5. So from these figures, I see that the tendency has decreased?—Yes.

13027. I was not able to understand it when you say that among the lower classes the drink evil has spread?—I am speaking from experience, of course; I am not speaking on the basis of statistics, they may give you a correct impression or they may not.

13028. When you make those remarks in your note, you are guided by your impression?—That is all.

13029. Are you aware of any experiment conducted by the Excise Department in any district here to enforce prohibition?—Yes, 5 taluks have been prohibited.

13030. What has been the result?—I cannot tell you definitely, but my information is that smuggling and drinking outside have increased; though it may have reduced the consumption of drink to a certain extent, it certainly has not had the effect which the authors of that scheme had in their minds.

13031. *Sir Henry Lawrence:* Is illicit distillation increasing?—That is my information.

13032. That is what you mean?—Yes, illicit drinking, and also they take out the liquor in water pots to drink outside.

The two go together.

13033. *Professor Gangulee:* In co-operative agricultural societies, are you of opinion that at present the credit facilities are inadequate?—For ordinary needs, it is quite all right, but for long-term loans it is not sufficient, there are absolutely none at all.

13034. And you advocate here something like land mortgage banks?—Yes.

13035. You are of opinion that land mortgage banks would furnish the sort of credit needed by the small cultivators?—Small and big.

13036. And you also make a reference here to the Federal Farm Loans Act of the United States of America; have you studied it?—I have read it at one time, and I mentioned it in my address to the Co-operative Conference at Bombay.

13037. Do you know to what extent that Act affects the small cultivator?—In America everything is big; I only think of the general principles involved in it, one association being a guarantee for the others and the State being behind them all, the debenture system and things of that kind.

13038. Are you satisfied with the administration of the agricultural co-operative societies?—Yes.

13039. Have you got any non-credit societies in this Presidency?—Very few.

13040. Only credit societies?—Credit societies are developed more than the non-credit.

13041. Is there room for the non-credit side?—There is room; you have heard about the famous Triplicane Store Society which is a splendid example of such societies.

13042. On page 346 you say: "Excessive sub-division of holdings exists in this Province", you do not say anything about fragmentation?—By sub-division I also mean fragmentation.

13043. It is the same?—More or less.

13044. You think sub-division and fragmentation are the same?—More or less the same.

13045. You say that sub-division is one of the causes of low agricultural production in India?—Yes, in some sense.

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13046. You say here "The obstacle in the way of consolidation is the Hindu Law." Do you envisage some time when the general public opinion of this country will be prepared to make such changes in the Hindu Law of Succession as might arrest the fragmentation of agricultural lands into uneconomic scraps?—In my opinion, this question of fragmentation is made too much of; I do not think that the evil is so great as is apprehended in some quarters.

13047. With regard to irrigation, on page 348 you make a statement "So far 830 lakhs of rupees have been invested in irrigation works in this Province, and an interest of about 10 per cent is being realised thereon." In that 10 per cent you include the 3½ per cent interest or whatever it may be?—Yes; the great anicut works on the Godavari and the Kistna were constructed at a low cost at that time; interest on that amount was calculated at 3 or 3½ per cent; they are now fetching 20 per cent.

13048. What is the profit to Government?—They made 20 per cent, when they were paying 3 per cent; I put it down at 10 per cent on the average, because the recent works cost more, the earlier works cost less, and the return is 10 per cent on the average for all irrigation works up to date, including this 8 crores and odd.

13049. You give all these figures from official statistics?—Yes.

13050. Or from your impression?—Not merely impression; I do not think that they would be wrong, at any rate very far wrong.

13051. You have come to this figure of 10 per cent, which you definitely state here, from official documents?—My calculations are from official figures.

13052. *Mr. Calvert:* On this question of indebtedness, is it your experience that the number of people engaged in moneylending is on the increase?—No, but one cannot say one way or the other; I do not suppose there is any decrease.

13053. Is the capital invested in this profession of moneylending on the increase?—I cannot state the figures; it is only an impression.

13054. You have made no detailed enquiry?—No.

13055. You mentioned that drink is now one of the main causes of borrowings?—Yes.

13056. Does not that point to a thoroughly bad system of credit?—It is in the village; the man takes his small vessel worth Rs. 4 and pledges it and gets Rs. 2 for it; he may spend Re. 1 out of it for drink.

13057. Can you approve of a system of moneylending for drink?—No, not at all.

13058. You would not restrict that credit?—I do not understand; I thought it was a case of interest; I thought you were referring to the rate of interest and the conditions.

13059. You cannot have borrowing without lending?—Of course not.

13060. I am talking of the lender, the man who lends money for drink?—But the man will say that there is no food in the house and he wants Re. 1 on loan for his food; half of it goes to the toddy shop.

13061. Does not the moneylender know that?—Perhaps he knows; and possibly there are no people to protest; that is an incentive to him not to care for the morals.

13062. You mentioned a suggestion for legislation for land mortgage banks?—Yes.

13063. Is it your experience that you cannot organise these land mortgage banks inside the existing system?—I am afraid we cannot.

13064. What exactly is the difficulty?—The present system does not admit of long-term loans.

13065. There is no prohibition?—There is no prohibition, but the whole system is based on short-term loans and easy payments and small amounts.

13066. Is there any peculiarity to Madras, as compared with the Punjab, which requires legislation?—I was under the impression that the present Act

is not wide enough to admit of enough extension, particularly long-term loans, but other concessions will have to be brought in; a separate Act by itself, suited to the peculiar requirements of these long-term loans, would perhaps serve us better.

13067. You do not think you can get over your difficulties by improving the education of the people?—No.

13068. Would you rather have legislation than education?—Yes, the two together.

13069. On the general rule for mortgages in this Presidency, what is the condition as to redemption?—Redemption is always provided for in the bond itself and the law also allows it.

13070. Do the profits from the mortgaged land wipe out both interest and principal?—That is so in the case of usufructuary mortgages; very often the mortgage is a simple mortgage; the mortgagor retains possession of the land.

13071. Your mortgages, then, are non-terminable?—I do not quite follow that expression.

13072. By terminable you mean a mortgage in which the profits of the land pay off the interest and principal within a fixed number of years, and on the expiry of that period the mortgage ceases and the debt is paid off?—That is one form of the usufructuary mortgage, but there are very few of those.

13073. Would you not favour that class of mortgage which automatically redeemed the mortgage?—Then what is the mortgagor to do during the period, if he hands over possession of the land? He must live on it.

13074. In your experience, have you many cases in which a mortgage has been of any economic benefit to the mortgagor?—No, unless it be a case where a man wanted the money for the purpose of trade or for business.

13075. Have you ever heard the expression that the mortgage holds up the farmer like the rope holds up the hanged man?—I have not heard of it, but I believe in it.

13076. Are the Madras Government to guarantee interest on these land mortgage bonds, on the debentures?—It was my policy at any rate; but I cannot speak for the present Minister.

13077. About fragmentation, you told Professor Gangulee that you thought the evil was exaggerated. Is that opinion based on any careful scrutiny of actual conditions in the villages?—I do not find any difficulty at all. I move very frequently in villages, I spend my vacation there; all my relations are there and yet I do not find any difficulty.

13078. Is that based on actual careful examination? Any scientific research?—Nothing of that kind. But if one's experience counts for anything and if one's knowledge of the country has any value, I should think there is not much. I do admit that there is some difficulty in this fragmentation; but it is not perhaps so big as it is supposed to be and that is my impression. I have not investigated into each case and taken the figures for every field and so on.

13079. Have you seen the Punjab methods of consolidation?—No.

13080. Can you make any suggestions whereby Government could encourage the sinking of capital in land improvement, apart from the Land Improvement Act?—For one thing, I would have the administration of the two Acts transferred to the Minister; at present they are reserved. I would also have the amounts distributed through the co-operative societies which again are under the Minister. These two might go a long way in helping the ryots more usefully than at present.

13081. They make it easy for him to get State loans?—Yes.

13082. But apart from that can you suggest any means of encouraging investment of capital in land improvement?—I cannot suggest any means unless it be these agricultural banks again, the land banks.

13083. Have you ever heard the complaint that when a cultivator takes a State loan he has more difficulty in borrowing from his village moneylender?—

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I referred yesterday, in answer to the Chairman, to the fact that he does not get all the money; he gets some per cent less.

13084. Have you in this Presidency and class of moneylending landlords?—Nothing like a class.

13085. It is growing to a class, moneylending landlords?—There are people who lend money.

13086. Do these people attempt to get their tenants into a sort of permanent debt?—Not always. I suppose circumstances conspire to bring the tenant to that condition.

13087. Is it not the devised policy to keep the property to themselves?—I do not think it is a deliberate attempt to acquire lands; but every opportunity will be taken to acquire the land.

13088. Have you found that such Acts as the Usurious Loans Act have any effect in restricting the credit of the cultivator?—No; I do not think that Act has been applied in this Province at all; occasions did not arise.

13089. It has not served to send up the rate of interest against the cultivator?—No.

13090. In this Presidency, they can alienate their land?—They can.

13091. Are there not restrictions, social or religious, on that alienation?—Nothing. Even in the case of a joint Hindu family, they can alienate; only the purchaser will have to bring a suit for partition. There is no restriction, except that there is difficulty in getting the land. If I purchase the undivided share of a joint Hindu family, I have to bring a suit for partition and for the recovery of the share of my vendor.

13092. Is the transaction of alienation simple in this Presidency?—Fairly simple, I should think.

13093. The procedure of alienation is not so difficult as to impose a real restriction on alienation?—None that I know of.

13094. You know in some countries the legal difficulties are very great in selling the land?—I do not think it obtains in this Province.

13095. *Mr. Kamat:* In the figures which you have handed over this morning to the Chairman about certain items of expenditure, comparative statements of expenditure, you complain that on the Department of Agriculture this Government are spending less than one per cent or something like that?—Yes.

13096. When you were a Minister did you press on the Government as a whole, that is the Reserved half and the Transferred half, for more expenditure on agriculture?—Certainly I did.

13097. And you could get that figure raised by no substantial amount?—No; but if you had examined my budgets, we always got something over and above the previous years; but difficulties arose in other directions and we could not spend the money in some years. Then there is the trouble between the Reserved half and the Transferred half about the percentages that we have to get; you know diarchy and its difficulties.

13098. There was some trouble?—Not serious trouble; but difference of opinion and things of that kind.

13099. When you say that 1 per cent or less than 1 per cent is too small a percentage, how much would have satisfied you?—It is rather a difficult question to answer. Nothing would satisfy me. I would like to have as much as they could give. You know only from 14 to 16 lakhs a year is spent on the Agricultural Department. I should certainly start with 20 lakhs and would have an increase of 5 lakhs every year as a working basis, not that there is any scientific basis for it. As a working basis I would start with 20 lakhs and would be satisfied for the next ten years with an increase of 5 lakhs every year.

13100. The only point is, did you as a Minister press for the whole of what you say you now want?—Not by way of policy; I told them that agricultural expenditure should be increasing every year and they satisfied me by giving me a lakh or two which sometimes I was not able to spend.

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13101. And you acquiesced in that?—I had no other option.

13102. And therefore there was no point in complaining that 1 per cent was not sufficient?—Why not?

13103. You acquiesced in that?—I could not help acquiescing although it does not mean that I was satisfied. I could not get more. I am not one of those who would throw away half a loaf because I did not receive a whole one.

13104. Just a word about the Agricultural Department about which so much has been said. In view of your remarks as to the future careers of agricultural graduates from Coimbatore and also as to the fate of the middle schools which you initiated, I ask you, suppose you were the Minister of Agriculture again, would you modify your agricultural educational policy to some extent, and, if so, to what extent?—I should like to know the direction in which you are thinking.

13105. Would you continue the policy of duplication of colleges, duplication of middle schools, agricultural bias schools, or would you in the light of your experience and in the light of your own remarks, see the necessity of modifying the policy which is now being pursued?—I should be glad to change the policy if I had an alternative one.

13106. Do I take it that you would have no alternative and you would continue this policy?—I would introduce such changes as were practicable and within the means and resources of the Government and their officers.

13107. In a word would you go to the length of multiplying the middle schools, for instance?—I would, only I would take care to see that the boys of the right type come there. Now we have failed in attracting the best into our schools. I would like to know where the mistake lay, remedy it and see that more boys came into the schools. I would not scrap the schools altogether, because the boys of the best type have not come.

13108. You mean you have no other definite suggestion to offer except the continuation of the present policy?—No; I would compel the boys to attend the agricultural schools till the age of 16 provided they were fit for cultural education and provided they were farmers' sons.

13109. Now about this irrigation policy of your Government, supposing the irrigation projects were a Transferred subject, would you have much liberty to initiate your own policy or instead of demanding the 6 per cent as the return on irrigation money, what would be the outline of your policy?—I think I have sufficiently indicated that in that answer of mine; but I do not mind telling you again. It is this : I would take into account all the factors which I have mentioned there, for instance, the increased production, the immunity against famine, the food supply, the increased wealth, increased prosperity and increased capacity to bear additional taxation. All these factors would be taken into account and a certain value would be given to them and would come back to the interest that we have to pay and a certain percentage would be struck as reasonable.

13110. I am asking you whether you would be satisfied with the return of less than 6 per cent?—I would.

13111. You would be able to borrow and get the loans in these days at less than 6 per cent?—I should not find any difficulty in that, because all the resources of the Government and all the property of the Government would be a security. It is not merely on the works that we borrow.

13112. That is to say, after paying the interest on your loans and the working expenses, you could still make your irrigation policy self-supporting and yet be within the 6 per cent?—Not in the sense that the revenue will cover the interest. But I would get more revenue from other sources because my people would be more prosperous; for instance, I could raise other taxes.

13113. In other words, increase of deficit; you are asking the general tax-payer to pay that deficit?—Yes; the general tax-payer, of course. He does pay for particular things. All the revenue comes from my districts and it goes all to these officers who never come to my districts.

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13114. You advocate the deficit being made up from the general funds?—That is so in theory.

13115. *Dr. Hyder:* Is not the Famine Insurance Fund provided by the general tax-payer?—Certainly it is.

13116. *Mr. Kamat:* Now about Fragmentation: We have no authoritative data, you say, whether fragmentation of holdings is increasing or whether it is stationary?—I do not know what is meant by authoritative. If it means statistics, I have not got them.

13117. Your Government have statistics on the point?—None that I know of.

13118. And yesterday also we were told that there were no up-to-date statistics or data, say, for instance, about other economic factors, on cost of production and so on. Is that also correct? We were told so by the Commissioner of Labour?—He is correct, I think.

13119. And this morning you have told us, in fact you have said in your memorandum, that Government enquiry should be undertaken?—Yes.

13120. For ten years you do not want any authoritative data about the economic condition of your Presidency?—You will never be able to get the economic data at present.

13121. So that is your view with regard to economic enquiries?—In fact I was not examined by the Economic Enquiry Committee; but I was by the Taxation Committee and I think I expressed the same view there.

13122. The whole policy of the Madras Government should be to proceed in its agricultural policy on the principle of groping in the dark?—I do not believe that because your economic figures are not before us we are groping in the dark. Somebody said there are three kinds of lies, white lies, black lies and statistics.

13123. You consider that statistics also are lies?—They are not always reliable; I shall put it in that form.

13124. So this Commission in coming to any conclusions, about the prosperity or otherwise of your Presidency should proceed purely on impressions?—It is rather difficult for me to answer that. I am giving evidence before you. I do not wish to say anything disrespectful. I have every respect for you; but I should say this that if you proceed on figures of that kind, I shall not be satisfied. Suppose an economic committee has prepared some figures or suppose scholars interested in economics go to the village and enquire into the conditions and collect certain figures of income and expenditure of a family, I will not rely very largely on those figures.

13125. Now about rural reconstruction. You are in favour of efforts being made towards the welfare of the villagers and rural reconstruction as a whole. Elsewhere we were told that the best agency for doing this sort of work would be something like the Servants of India Society or the Servants of the Rural India Society or perhaps something like the Y. M. C. A. agency. Do you think it possible?—I certainly respect those persons who do work in that line, but I am afraid this work should not be done by such a body. There should be a definite programme of Government.

13126. There should be a Government agency. Would not the Justice Party be able to do much on this line?—I do not think they are capable of achieving any more than anybody else.

13127. Because public spirit is like that throughout the country?—Public spirit alone does not feed the people, does not give them schools, does not give them hospitals, and does not give them village roads. You can teach them well, and impress upon them to behave better.

13128. It educates public opinion?—To what effect?

13129. *Professor Gangulee:* In other words public opinion is not created?—It is rather scientific language. If you mean to say that it does not supply these things and these needs I would agree with you.

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13130. *Mr. Kamat:* In other words, you are not a believer in creating public opinion by non-official agency as a whole?—That is rather broadly put. Private agencies have got their own place for creating public opinion. But this is not merely a matter of public opinion. It is one of the substantial things being to the villagers.

(The witness withdrew.)

Sir K. V. Reddi Nayudu.

APPENDIX.

(Supplemental Memorandum submitted by Sir K. V. REDDI NAYUDU, Kt.)

I.

Amount spent annually by the Government of Madras on Agriculture.

1	2	3	4	5	6
Year.	Total Revenue.	Land Revenue.	Spent on Agriculture.	Percentage of Col. 2 to Col 4.	Percentage of Col. 2 to Col. 3.
	Rs.	Rs.	Rs.		
1921-22 . .	16,00,00,000	6.20,00,000	14,21,000	·9	2·3
1922-23 . .	15,64,50.000	6,43,00 000	14,45,000	·9	2·2
1923-24 . .	16,58,00,000	6,34,00,000	14,50,000	·8	2·3
1924-25 . .	16,27,00,000	7,40,00,000	14,60,000	·8	1·9
1925-26 . .	16,41,00,000	7,50.00,000	15,50,000	·9	2·1

II.

Amount spent on Agriculture by Governments of certain countries per 1,000 of their population.

	Rs.	A.	P.
Madras	24	0	0
India	33	10	8
Japan	216	15	0
France	948	0	0
United States of America	1,681	0	0

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Mr. D. A. D. AITCHISON, M.R.C.V.S., M.P.S., I.V.S., Veterinary Adviser to the Government of Madras.

Replies to the Questionnaire.

QUESTION 1.—(*a*) (*ii*) VETERINARY RESEARCH.—Muktesar is our Central Research Institute and is under the Central Government. In the matter of the way in which Muktesar has been run it is my humble opinion that the Central Government have been shaping a wrong course and have not succeeded in making the best use of their most experienced scientific man, *i.e.*, the Director. The Director should have administrative work only to occupy his time; with that alone he would find no day too long for the work he had to do. The present Director might be styled Imperial Research Officer. There is a very strong feeling in the Indian Veterinary Service that they should be represented in the Central Government by a Veterinary Adviser to the Government of India, and in the Presidencies and Provinces by a Veterinary Adviser to the Local Government or by a Director, Veterinary Department. The Director at Muktesar should therefore also be Veterinary Adviser to the Government of India. The system of the Government of India has been to bring out a man specially trained at Home in research and all its allied laboratory subjects, and then to turn him on to the administration of an institute like Muktesar without his having had administrative experience, and, what is more important and special still, administrative experience in India. It is more essential that the Director should be an officer of much Indian experience than that he should be merely an experienced research officer if the best use of Muktesar is to be obtained.

QUESTION 15.—VETERINARY.—(*a*) In this Presidency the Civil Veterinary Department is independent of the Agricultural Department. To obtain the best efforts from the Veterinary Department, this is as it should be. The department can represent its own cause to Government and in doing so is in the best position to further the use of the department in its services to the country. The responsibility of its work is also brought home to the Veterinary Adviser to Government in a way that it would not be, were the department under the Director of Agriculture.

No officer of the Veterinary Service wants to be Director of Agriculture. Any officer of the Agricultural Department, however, seems to consider himself able to fill the appointment of Director of Agriculture, it does not matter whether he be a Chemist, Botanist, Sugarcane Expert, Cotton Specialist, Paddy Expert, etc. Perhaps that may be a reason why any of these officers feels capable of also successfully running the Veterinary Department in addition to the Agricultural Department. To put it another way, the Agricultural Department would like to enjoy the credit for the work of the Veterinary Department.

I noticed that Mr. E. J. Bruen, Livestock Expert, Bombay, in the course of his evidence stated: "As a means of establishing closer co-ordination between cattle-breeding and veterinary work, the Director of Agriculture should be in control over both. That lack of co-ordination was being very seriously felt at present." It does not seem to occur to him that the reason for the lack of co-ordination complained of may be found in the short-comings of the officers immediately concerned. It may be safely accepted that in this Presidency no such lack of co-ordination exists, officers of the two departments being only too delighted to be of assistance to each other.

(*b*) (*i*) No veterinary dispensaries are under control of local bodies in this Presidency.

(*ii*) I have no room to complain of any want of support from the Madras Government in the expansion of the department.

(*iii*) Yes.

(*c*) (*i*) More use is being made of veterinary dispensaries by agriculturists as time goes on. Some districts are more backward than others, but yearly I

have several petitions from local bodies to open a veterinary hospital in their area.

(*ii*) Yes, and from several places I have had complaints from ryots on the absence of the Touring Veterinary Assistant Surgeons.

(*d*) In this Presidency we do not now have much opposition in dealing with contagious diseases, still it does exist in places owing to prejudice, religious and otherwise, and on the ground of its being ploughing time, etc.

Under the Madras Cattle Disease Act, notification of disease is compulsory and we can segregate animals and have the disposal of diseased carcasses, also we can do compulsory inoculation of all animals by the serum-alone method. There would be much opposition to compulsory serum-simultaneous inoculation, especially if it happened to be in the ryots' busy time when they require the use of their cattle, and on the ground of expense attached to the operation.

(*e*) Occasionally we run short of serum owing to delay in delivery after it has been ordered from Muktesar. The delay seems to be in the difficulty of transport between Muktesar and Kathgodam railway station. Better arrangements there would facilitate quicker delivery.

(*f*) We meet little opposition in preventive inoculation by the serum-alone method in rinderpest, and also little opposition for inoculation against other diseases. A system of charging a fee of eight annas per head was introduced here for a time and it almost stopped inoculation.

(*g*) Further facilities for research into animal disease are most desirable.

(*i*) Muktesar Institute should be equipped with a research staff which would be free from any routine work responsibility.

(*ii*) Provincial research institutions should be extended and each Province should have its own.

(*h*) Research should be conducted at Muktesar as well as by officers in the Provinces. There is plenty of ground for both and frequently combined efforts would no doubt be required.

(*i*) It is very desirable that a Veterinary Adviser to the Government of India should be appointed. He should be an experienced and senior officer of the Indian Veterinary Service with knowledge of Indian conditions and administration of Veterinary Departments. This officer should also be Director of the Muktesar Research Institute. He would be a safeguard against mistakes in the field which have been caused, and which are likely to be caused, by a Director who is merely a research officer and who does not possess sufficient Indian experience.

Heads of the Veterinary Departments in the Provinces would readily consult on all veterinary matters with the Veterinary Adviser to the Government of India, and he would be in a better position to get whatever information on veterinary matters he required for the Government of India from his personal knowledge of some of the local conditions and of the veterinary officers in different parts of India than any Agricultural Adviser.

Oral Evidence.

13131. *The Chairman:* Mr. Aitchison, you are the Veterinary Adviser to the Government of Madras?—Yes.

13132. You have put in your answers to the Questionnaire sent by the Commission and we are obliged to you for that; and also I think we have to thank you for the memorandum* on the Civil Veterinary Department which has been in the hands of the Commission for some time. Did you prepare that also?—Did it go to you through the Secretariat offices? I prepared some memorandum; I did not know what it was for.

13133. Would you mind answering some questions, or have you any statement of a general nature which you wish to make at this stage?—I think it would be better if you would put the questions.

13134. First of all, I do not find, either in your answers to the Questionnaire or in the memorandum to which I have made reference, any very complete statement of your headquarters staff or the staff of the department throughout the districts. I am going to ask you if you can kindly send the Commission a statement showing the various teaching or administrative posts held, with the grade of officer holding them?—I shall do that.

13135. On that point, what would you regard as a sufficient provision of professional officers throughout the Presidency to carry out your policy in the matter of prevention of animal diseases?—The original policy was that we should have a touring man and a dispensary or hospital man in each taluk. That would mean about 480 men; I think there are 240 taluks. In addition to that we will require some 15 to 20 per cent as leave reserve. With that policy in view there was also being developed the superior part of the department and the idea was to have a Chief Superintendent and three Superintendents. Each of these Superintendents would be in charge of about a third of the Presidency. Then, between the Superintendents and the Veterinary Assistants there would be Deputy Superintendents and Inspectors.

13136. To which service would the Inspectors belong?—They would belong to the subordinate service.

13137. That would be the highest rank in the subordinate service?—Yes, that was the idea. As a result of the Retrenchment Committee they abolished the Superintendents and Inspectors and we have now the Veterinary Adviser to the Government who is in charge of the whole of the executive part of the Civil Veterinary Department of the Presidency as well as of the College. He has no Assistant Superintendents or First, Second and Third Superintendents but only has Circle Officers and there are only six of them in the Presidency. These are Provincial Officers and they correspond to the Deputy Superintendents under the old scheme. The Inspectors have been totally abolished so that there is myself, the Head of the department, and six Circle Officers. There are 212 Veterinary Assistants and there is no method of inspection between the Veterinary Assistants and the Circle Officers. The Circle Officers can only visit each touring man's district or his dispensary twice in a year. The result is that the supervision is not sufficient.

13138. Is it your experience that sufficiently active supervision is necessary?—Very necessary, and the reason I put forward to prove it is that I have now got a case of complaint against the subordinates that requires severe dealing with. It is a case of intimidation of the people bringing animals for treatment and wanting to charge them private fees of their own. Where men have been placed in charge of meat inspection, they levy a private fee from the butchers. They put in false touring claims and I believe it is all due to the fact that once they have seen the Circle Officer they feel that they can be free, because for the next six months they know that nobody will be anywhere near them.

13139. What salary do they receive?—They begin on Rs. 60 and can rise up to Rs. 120 in the ordinary grade and to Rs. 175 on selection grade.

13140. Is that sufficient salary in your judgment for them to maintain themselves in decency?—No, I think it is too low.

* In the note prepared by the Madras Government for the Commission. Not printed.

Mr. D. A. D. Aitchison.

13141. Do you associate these improper practices with the lowness of the salary?—In some cases, I think, that has to do with it. There are other cases where the higher the salary the bigger the illicit money they want to make. Some of the men will be satisfied when you put them on a bigger salary. There are others who, after getting the bigger salary, instead of being satisfied want a still bigger one.

13142. The present is expected to be in proportion to the salary; that is the position, is it?—Yes.

13143. Could you give the Commission any accurate information as to the frequency of the incidence of these cases to which you refer?—At present I have a case where a man asked a Veterinary Assistant in charge of the hospital if he could inoculate his cattle and protect them against rinderpest because he wanted to send two animals to plough his land in a district where there was rinderpest. The Veterinary Assistant said. "Yes, but I want Rs. 1-12 for that." Well, the man was perfectly prepared to pay the sum and he would have done it and we would have heard nothing about it. But the misunderstanding was that he thought Rs. 1-12 was for both animals, but the Veterinary Assistant sent his peon to collect Rs. 3-8. This upset the owner who said "I am not going to pay you Rs. 3-8 because you told me Rs. 1-12" with the result that he reported the matter to me. Had there not been that misunderstanding I would not have known anything about it. Another case is that of a Veterinary Assistant who is doing meat inspection in a certain town union. He gets paid by that union Rs. 15 per month in addition to his pay.

13144. Is that within the rules?—Yes, that is within the rules. In addition to that he was getting Rs. 2 from each of the butchers and there were 13 butchers. I suppose he found that his family required more money and he tried to collect Rs. 4 instead of Rs. 2.

13145. Was the Rs. 2 within the rules?—He had no right at all to accept that; the butchers give it because if they do not do something like that they would find difficulty in getting the meat passed.

13146. Rs. 2 a month or Rs. 2 a year?—Rs. 2 a month. He tried to raise it to Rs. 4 and the butchers in the union struck work for five days, and the President of the union reported it to the Circle Officer, who transferred the man; the case is under inquiry just now. Another case is where a Veterinary Assistant handed over charge of his instruments; the instruments were not checked, and he took away most of the instruments. He also supplied five gallons of lysol to certain people, and that lysol was Government property; he did not only take the five gallons from Government but he did the people out of one gallon. On enquiry he produced a receipt for five gallons and said that he purchased the material in the village, but the enquiry showed that there was no such person in the village. Then, at present there is also a case which is for putting in false travelling claims. I have dismissed one or two for doing that and I have suspended a few. That is the result of cutting down the inspecting staff. There is only myself and six Circle Officers for the whole Presidency. With better supervision the opportunity and the temptation would not occur, and the men would not do it; it is want of supervision, I am sure.

13147. Are you doing what you can to inform the public as to what charges are legitimate?—Except in a few cases, the treatment is free.

13148. Are you informing the public that it is free?—I think it is generally understood.

13149. Evidently not by the man who is prepared to pay?—The unfortunate thing is that people are perfectly ready to pay. The man I was speaking of was a retired Government official and he knew just as well as I do. But you meet so many people who are prepared to encourage that practice and that is the difficulty we are up against.

13150. So that, you do not think you can do anything?—It is not that people are not aware; not at all that; they are aware that they get free treatment.

13151. Do you think that the general effect of this malpractice is to limit the usefulness of the service?—I do not think it interferes much in that way.

It is a matter of discipline in the department, and one tries to maintain as high a standard as possible.

13152. You do not think it prevents ryots from having their animals treated?—It must in a small way. I have had one or two instances where the ryots have taken away their animals and reported it. One case I am thinking of is this: A ryot promised to send so much straw for the Veterinary Assistant's cow; the Veterinary Assistant sent his peon over to the ryot's field, and the ryot sent a fowl instead of the straw. That displeased the Veterinary Assistant, and he made it so unpleasant that the ryot took his animals away and reported the matter. But I do not think that it interferes to any extent. The ryots know it and they will submit to what they consider is a fair amount, but if any of the men try to exceed what they consider is fair, then they complain; but not until then.

13153. I turn now to another subject. I take it from your note that you are quite definitely of opinion that the Veterinary Service throughout the country should be independent of the Agricultural Department?—Yes.

13154. You think that that should apply to Muktesar and to the officers of the Government of India on the one hand, and to all Provinces on the other?—I do, from my personal experience. We have always been entirely separate in this Province, and I do not think the Veterinary and Agricultural Departments in other places are on better terms than they are here.

13155. Are you in close personal touch, for instance, with the work that is being carried on at Hosur?—No, except just when I go to inspect the Veterinary Assistant there or to do some testing which, I consider, requires my attention.

13156. Are you of opinion yourself that the duty of improving breeds of cattle is best left to the Agricultural Department?—Well, from my experience I think the greatest success in India has been obtained at Hissar in the Punjab, which has been run for the last quarter of a century by the Veterinary Department in the Punjab. I think that cattle-breeding is so much allied to, and associated with, veterinary work that it might even come under veterinary. I think that cattle-breeding is simply one subject among a host of ten, fifteen or twenty others dealt with by the Agricultural Department, and therefore might not receive from that department the amount of attention and interest necessary. Were cattle-breeding under the Veterinary Department, it might receive, I would not say greater, but better attention.

13157. Now, apart from the influence of heredity upon resistance to disease, what close connection is there between improvement of the constitution and working capacity of the animal, and veterinary science?—I think that what we have got to contend against here is climatic conditions, and we get very good evidence of that if we apply climatic conditions in this country to imported European cattle. Even if they do live out here they deteriorate; and I think that the same climatic conditions affect the Western breeder of cattle in the tropics. We find that deterioration is not only due to mixed breeding, but to climatic conditions as well. We might see whether climate has anything to do with it by taking Indian cows Home and seeing what we can do with the first, second and third crosses under the climatic conditions in England.

13158. I do not quite gather how you reinforce by this particular argument the point as to the desirability of the Veterinary Service controlling cattle improvement?—I beg your pardon. I missed the point.

13159. On the other hand there is very close connection between the working quality of the bullock and the requirements of the agriculturists?—I do not think that the half-bred working bullock, except in hill districts, will stand the work of the Indian bullock. The only place where I have seen them work is Ootacamund, and I must say that they seem to stand the work there, but the impression I gained there was that they were too top-heavy, too big a head with too heavy a body. The Indian working animal is a very well-bred and clean-bodied animal. Your half-bred is too heavy for climatic conditions and for the condition of the soil.

13160. I gather you are not concerned to press very strongly for the placing of the improvement of the animals of the country in the hands of the Veterinary Service?—Not down in these parts.

13161. You are quite content to leave that to the Agricultural Department?—I am quite content to go on as we are going.

13162. But you do insist upon the view that the Veterinary Service should be independent of the Agricultural Department?—Yes, to get the best service from the Veterinary Department.

13163. Now on one or two specific points: on page 383 in reply to question 15 (iii) (*e*) you say: "Occasionally we run short of serum owing to delay in delivery after it has been ordered from Muktesar. The delay seems to be in the difficulty of transport between Muktesar and Kathgodam railway station." Have you any desire to make serum in the Madras Presidency, or do you think it is better left to Muktesar?—I think it is better left to Muktesar.

13164. It led in certain instances to shortage of serum?—There was delay in getting the supply; there is room for better organisation of transport of serum from Muktesar to Kathgodam.

13165. Did you represent that to the people responsible?—I represented that to the people responsible, and the result of that is that the present contract has another year to run, after which it will be changed.

13166. How is the transport between Muktesar and Kathgodam railway station carried out?—People carry it on their heads. Kathgodam is on the plains; Muktesar is in the hills, about 36 miles away.

13167. How long does the serum keep?—We do not use it if it has been three months out of the refrigerator room.

13168. The creating of a sub-store at the Kathgodam railway station is the obvious way of meeting that difficulty; it is a question of refrigeration?—Yes.

13169. You say on page 383 "Muktesar Institute should be equipped with a research staff which would be free from any routine work responsibility. What do you mean by that?—My experience is that Government expect too much of their officers, and no man can do his day's routine work and then do good research work afterwards. My experience is that all the research that we do is done by officers in addition to the work they are expected to do by way of routine.

13170. But here you are talking about Muktesar?—The same thing applies to Muktesar. They go in for six months' classes and two years' classes; and the men who do the laboratory work have also got to give lectures and prepare students. They are doing the same thing here in the Madras Veterinary College.

13171. Do you say that a man engaged on an important piece of research work should not be asked to give any lectures at all?—He might give one or two lectures a week, but routine work in addition is too much.

13172. Do you think one or two lectures might be of great advantage to him as well as to the class?—Yes, I do.

13173. Because of the contact with the presumably keen minds of the students that such lectures provide?—Presumably, yes.

13174. On the same page you say: "It is very desirable that a Veterinary Adviser to the Government of India should be appointed. He should be an experienced and senior officer of the Indian Veterinary Service with knowledge of Indian conditions and administration of Veterinary Departments. This officer should also be Director of the Muktesar Research Institute. He would be a safeguard against mistakes in the field which have been caused, and which are likely to be caused, by a Director who is merely a Research officer and who does not possess sufficient Indian experience." Would you cite some of those mistakes?—These are mistakes of the Central Government; I have nothing at all to do with them; so, I would ask you to obtain any information on that subject from the Agricultural Adviser to the Government of India. I do not wish to make any statement about that, because it is not in any province.

13175. But you bring in these mistakes that have been made as an argument in support of your statement?—I will give you an instance of a mistake that was made about 10 or 15 years ago: an officer inoculated cattle by the serum-simultaneous method before he understood it.

13176. *Sir James MacKenna:* Was he an officer of Muktesar?—No: the result of that operation was that he killed a very great number of valuable English cattle up in Ootacamund, and Government had to pay a certain amount of damages for that. If there had been proper co-ordination between Muktesar and that man's work done in the south here, the mistake probably would not have occurred.

13177. *The Chairman:* In what service was the officer who made this mistake?—In the Civil Veterinary Department of the Province.

13178. Do you suggest that if a fully trained and experienced veterinary officer at that time had been in the position of an Adviser to the Government of India, this error by a Provincial Officer at Ootacamund would not have occurred?—Yes, that is my opinion.

13179. I understand that you are aiming now at a further year's training in the syllabus of the Madras Veterinary College, making it a 4 years' course?—Yes.

13180. How about the subsidy for students engaged in the 4th year course? Will you have to provide that throughout the course?—Yes.

13181. What is the present subsidy?—At present there are 15 stipends of Rs. 15 and the number of stipends, in my experience, limits the size of the class. Some years ago, before the Retrenchment Committee sat, we were taking in 40 students a year, and each of these 40 had a stipend of Rs. 15. The stipend 15 years ago was only Rs. 10; I got it raised to Rs. 15; Government will have to be prepared to continue the stipends for 4 years in place of 3.

13182. Is it your experience that the class of young man who comes into the College for tuition can make any contribution towards his own living expenses during his period of training?—Some can, but it is a very difficult thing to find out those who can and those who cannot, because, when questioned, they have the same reply that they cannot unless they get the stipend.

13183. Will the addition of another year, making it a 4 years' course, be a serious increase in your budget?—Yes; in order to make it a 4 years' course, we will have to improve the teaching staff very considerably, and where now the lecturers are simply selected Veterinary Assistants in the subordinate grade, they would have to be men of the calibre of the provincial grade; the Professors will have to be men of the Indian Veterinary Service. So Government must be prepared to meet much higher costs.

13184. Is it your view that the officers in the districts fail on the professional side at the moment, through lack of sufficient training?—Some do, some men I am very pleased with indeed; with some others not so pleased.

13185. Is it because of your dissatisfaction with the few, that you have pressed for this extra year's training?—No; there is a general impression throughout the whole of the department in India that we ought to have a more highly trained Veterinary Assistant, and it is the policy of the Government that the teaching in the country should be taken to as high a standard as we can raise it.

13186. Do you subscribe to this view?—Yes

13187. Do you think it is in the public interest that the expenditure should be incurred, in order to raise the level of efficiency of the service?—I do.

13188. Another point you mentioned in the memorandum was that an officer specially appointed for the work of cattle improvement would be an advantage?—Yes.

13189. Have you got an officer of this nature in the service?—My experience is that the Cattle Specialist will have to give lectures on dairying. I consider that to run a cattle farm successfully and to further the improvement of cattle breeding throughout the Presidency and to keep in touch with the

improvement of cattle, he has got to have his attention fixed there; it is no good expecting him to be a teacher in a dairy class or anything else.

13190. Which farm is it that you refer to?—I am referring to the Hosur farm, because I know Mr. Littlewood has gone Home, and he is going to take certain courses in dairying; they ought to have a man for dairying purposes. If you are going to have a man to run a cattle farm properly, his sole attention should be in that as it is up at Hissar in the Punjab.

13191. I take it you do associate the improvement in the dairying quality of the cow with the bettering of the draught ox?—Yes; there is no reason why a special officer should not also be on the farm; and he should keep all these records and so on; let the man who is responsible for the improvement of the breed do the farming and look after the breeding, and let the dairy specialist be responsible for the milk-recording and the butter-making and looking after similar work; but to put that work on to the man who is going to improve and develop your cattle is only spoiling the ship for the paint.

13192. Would you agree, in your experience, that an improvement in the milk-yielding quality of the cow and an enhancement of the interest the ryot takes in his cow would be a most important contribution to the improvement of agriculture in this Presidency?—Yes, I do.

13193. Am I right in thinking that this Presidency has in force an Animal Diseases Act?—Yes, it has been in force since 1866.

13194. Would you tell the Commission, shortly. what the effect of that Act is?—We can control the movement of cattle; we can enforce compulsory inoculation, we can deal with the carcasses, and can control movement.

13195. You can control movement inside the Presidency?—Yes.

13196. Can you prevent animals from inside the Presidency being taken into districts outside the Presidency?—No, we cannot do it by that Act; when I say that we can control movement, I mean we can try to control movement, but the difficulty of applying it efficiently is a different thing.

13197. Does the Act made it lawful for you to prevent an animal leaving the Presidency?—Yes; we can prevent an animal from leaving a show ring.

13198. What are the conditions that make it impossible to make it effective?—We have not got sufficient veterinary police; we have none at all; we have to depend on the ordinary police; it is very difficult indeed for a policeman to control about 30,000 people and 15,000 heads of cattle at a show.

13199. I expect you know the contribution that the police in Great Britain made to the carrying out or administration of such statutes?—Yes, but the same does not apply to this country; a policeman here, if you give him 4 annas, as a rule will let you do anything; he is like that.

13200. You think that veterinary police would be immune to this temptation?—No, I do not; supervision is required.

13201. Are you putting into force your powers in the matter of inoculation?—Yes, in certain districts, wherever the disease is bad.

13202. Have you ever gone the length of insisting on the serum-simultaneous method?—That is not compulsory; it is only the serum-alone method that is.

13203. What is the percentage of mortality in the case of the serum-simultaneous method, in your experience in this Presidency?—I think there were one or two accidents about 4 years ago; I was at home at the time, and I do not know the details of it; but in the last 3 years, we have not had any at all.

13204. It is a question of technique?—Yes, technique.

13205. The process itself is now perfected?—Yes.

13206. If you owned a bull worth a couple of hundred sovereigns, you would have no hesitation in inoculating it by the serum-simultaneous method?—No; I would pay £5 and have it done; I would insist upon it.

13207. How about carcasse?—That is a very difficult thing again; when an animal dies out in the district, the *Chuklars* are on it at once, and they simply take away the skin.

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13208. It is in their hereditary right that such carcasses should go to them? —Yes; we can only improve these conditions gradually as the department expands and the ryot gets educated to the responsibility of it.

13209. So that, in fact, that section of the Act is more or less a dead letter? —It cannot be applied very thoroughly at all, while it has assisted us. As a matter of fact, I think there were 187 or 188 prosecutions where people refused to have their animals done under this Act; a few of them were prosecuted and small fines inflicted; others were persuaded and that was sufficient.

13210. How about the services of your department and staff in the matter of diseases of animals other than the ox?—Well, of course, the ox is by far the greatest portion of our work, but there are subsidiary interests besides, such as dogs. The horse, down in Southern India, I think is of very little importance; it was of importance at one time, more so in the Salem and Coimbatore districts especially; at one time we had entire horses standing at service there, for the improvement of the breed, but since the motor buses have intersected the country in all directions they have practically wiped out the usefulness of the *jatka* pony, and I do not think we need consider horse-breeding at all. In towns like Madras, Coimbatore and other places, private people have horses for recreation purposes and some for utility purposes, but the veterinary hospital is sufficient to look after them professionally. The difficulty that I now know exists in this part of India is that horses are very scarce, though these horses are required by planters and by private individuals in towns.

13211. How about the relation between the services that your department renders and the question of public health; is there any connection?—Yes, it is again in this way: I had a communication from the Superintendent of the King's Institute at Guindy, pointing out that there was a peculiar form of disease, which they thought simulated small-pox, and they thought it had originated through contact with fowls. He wanted to know if I had known of chicken-pox spreading in that way to human beings, that is, of chicken-pox spreading to man and simulating small-pox in the latter. I informed him that I had recently known of an outbreak of chicken-pox in fowls which were running amongst men, cows and calves and it had not spread to any of them. He said when next they met an instance of the same condition they would ask for my assistance. Then also the Director of Public Health considered the probability of an existing outbreak of botulism on which he consulted me but we decided it was ordinary poisoning from the consumption of large quantities of putrid meat. In such ways there is a connection.

13212. How about rabies?—Of course rabies has a very strong interrelation.

13213. *Professor Gangulee:* Tuberculosis in cattle?—Yes, we work on that at present.

13214. *The Chairman:* There is no system in force here of testing cows, the milk of which is being sold, is there?—None whatever; there is no precaution in that way. I have pointed out to the Medical Officer of Health and the President of the Corporation that they ought to obtain the services of a veterinary officer, and what his work would consist of; but so far they have only obtained the services of a Veterinary Assistant and when they have had him, instead of allowing him to look after the veterinary work, they put him on to checking food supply and such work as that.

13215. Do you know whether the incidence of the recorded tuberculosis is on the increase amongst humans?—Amongst humans, I do not know.

13216. *The Raja of Parlakimedi:* Have you got any scholarships in your institution earmarked for depressed and backward classes?—Yes.

13217. What is their proportion to the actual number?—We now have 15 stipends.

13218. Out of that how many?—Out of that I think either one or two; the number is very small; it is divided up between the different communities. For the last three years we have been admitting students on a communal basis.

13219. But a certain percentage is earmarked for the backward classes?—Yes.

13220. Then as regards bringing home to the public the free treatment given by the department, besides putting up notices in front of the dispensaries has anything else been done?—No; on that point nothing has been done, because it is thoroughly understood that it is a Government institution and that treatment is free.

13221. But rural people are very uneducated and in certain parts especially they do not know these things. Are your people, I mean to say the departmental people, doing anything in *shandies* and other places?—I think the suggestion to include on the notice boards the fact that treatment is free is quite good; I shall try it.

13222. It does not find a place now?—No.

13223. I think it will be better if it is in the recognised vernacular?—It will be in the vernacular.

13224. And are departmental subordinates made to attend these big periodical *shandies*, cattle *shandies*?—Yes.

13225. If they lie in their jurisdiction?—Oh, yes; they have got to attend to them; they are appointed to them.

13226. And they also take up treatment if possible?—Yes; they have their veterinary medicine chests with them.

13227. That, of course, encourages these rural people to bring in numbers of their cattle to the hospital?—Yes, it is a means of advertising the usefulness of the department.

13228. There is a departmental order to that effect, I suppose?—Yes.

13229. What are the actual restrictions adopted for distribution of stipends?—There are no restrictions; it is left to a Selection Board and the Selection Board settles the point. The stipends are fixed at Rs. 15 per month.

13230. Is it done on any examination? Or what basis do you go upon?—The Secondary School Leaving Certificate.

13231. The selection of the boys for the stipends?—On their technical qualification, on the marks which they obtain at the School Leaving Certificate examination.

13232. And poverty also is taken into consideration. is it?—Only in the backward classes. And suitability; if I had one man of whom I knew that his people were landowners he would make, I would think, a more suitable student for the veterinary course than a boy whose father was perhaps a clerk and had no connection whatever with the land. The more associated they are with animals and land in their family, the more likely they are to make suitable Veterinary Assistants.

13233. Does it bar a student to get a stipend from the Government if he gets some contribution from other sources?—Yes.

13234. In what way?—In this way that if a student were getting a contribution from some other source I should want to give that stipend to another student, because it would be the means of getting another student for the College.

13235. Irrespective of what amount he may get from other sources?—I should put it this way: To the boy I should say 'now you cannot draw two stipends; you may have a Government stipend or you may continue to draw the stipend which you are drawing or the assistance you are getting'; I should advise him to inform his supporter that the ordinary stipend is Rs. 15 a month and as he cannot have his and get the stipend from the College, would he consider the difference and put him on the same footing as the other students; I think that any man who is supporting the boy would probably do it. But I should so represent the case to the student that I would try to get him to obtain the stipend equal to the Government stipend so that I could reserve the Government stipend for another student who was not being supported at all by anyone else.

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13236. Has the Agricultural Department or the cattle-breeding department approached you in connection with research work conducted on these different concentrated food materials?—No; they would have to do that themselves on their own estates.

13237. You do not tackle the food problem?—No; simply diseases and education.

13238. *Sir James MacKenna:* What are the educational qualifications for admission to the Veterinary College?—At one time, it was the Preliminary for the University. Now it is the Secondary School Leaving Certificate with 45 per cent of marks in English and 35 per cent of marks in mathematics and a vernacular.

For Mahommedans it is 35 per cent in English and 30 per cent in mathematics. For backward classes, Europeans and Eurasians it is left to the discretion of the Principal.

13239. English is compulsory?—English is compulsory; all teaching is done in English.

13240. What percentage of your students are drawn from the actual cultivating classes? Could you tell me roughly?—I should think only a small proportion.

13241. How do you find these non-agricultural boys in the matter of the actual handling of animals?—It is surprising how they take to it.

13242. That is not a defect you think? You mean it is easily got over?—Yes; we can teach them and they become accustomed and will handle animals quite well.

13243. Is education free?—Yes; it is not only free but they get everything free, their instruments, etc., and they get a stipend as well for attending.

13244. *Sir Henry Lawrence:* Do they all get a stipend?—They all get a stipend.

13245. *Dr. Hyder:* Some of them do not pay tuition fees?—None of them.

13246. *Sir James MacKenna:* Absolutely free?—Absolutely free.

13247. How many stipends have you?—Just now we have about 45.

13248. The Government give them?—Yes.

13249. What do you give at the end of the course, a diploma or a degree?—A diploma.

13250. A diploma of the Madras Veterinary College?—Yes.

13251. Are these stipend-holders all guaranteed posts under Government at the end of the training?—No; there is no guarantee, but they are required to enter into an agreement that they will serve Government for five years if required to do so; they are not in any way guaranteed employment.

13252. Apart from your stipend-holders, have you any private students?—Yes.

13253. What happens to them? Do they go into private practice?—No; they come from the Malay States.

13254. And go back there?—Yes; we have got three or four and they pay Rs. 400 a year.

13255. Have you any private students from your Presidency?—Not from the Presidency. We have had private students in the case of Rajas and zamindars training their own men.

13256. They go back to their own States?—Yes.

13257. What is the number of cattle in the Presidency?—I think it is about ·21 millions.

13258. What is your average mortality?—I think last year it was 255,000 from diseases.

13259. A quarter of a million?—That is, reported cases. Of course, there would be many more that were not recorded at all.

13260. The retrenchment axe has been very heavy on your department?—Yes.

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13261. What would a fair figure for the average value of this quarter million of cattle that you have lost from disease be? Even assuming we take it at Rs. 10 a head which of course is ridiculous?—We might take it at Rs. 5 per head.

13262. All right; let us value them at Rs. 5. From that value of a quarter of a million cattle at Rs. 5, could you not argue for the removal of this retrenchment policy with regard to the Veterinary Service in view of the enormous capital saving that would be achieved by the prevention of disease?—I shall argue for that in putting up my scheme for the 4 years' course.

13263. At present, as you told us, research is very scattered all over India and we do not know what is going on anywhere except at Muktesar. Do you think that, with a view to bringing veterinary research together and to give it a fresh impetus, its direction through a Central Advisory Committee would be advisable?—I do.

13264. *Professor Gangulee:* Have you any definite idea in connection with such a Committee, how it would be constituted? What would be the functions of the Committee?—There should be a Central Advisory Committee; on that Advisory Committee there ought to be the Agricultural Adviser to Government; there ought to be a Veterinary Adviser to the Government and he ought to be on that Committee; there ought to be the Director-General of Indian Medical Services and there ought to be Heads of other research institutions, perhaps from the Universities. But there ought to be a Central Advisory Committee and the Central Advisory Committee ought to have a central fund supplied by the Central Government. Then, according to the department to which the research belonged, there would be formed sub-committees, these sub-committees with the assistance of the advisory Head in the various Provinces would decide the work that is required, and in the central institutions such as Pusa and Muktesar the Directors, the Veterinary Adviser and the Agricultural Adviser, can indicate the lines there with the help of their own research men. I am simply putting the scheme roughly.

13265. In the central institutions such as Pusa the Directors, the Veterinary Adviser and the Agricultural Adviser can carry on researches?—Yes, with the help of their research men.

13266. Would any representative from your own department or from the Provinces sit on the Committee?—Yes, these would come in in the Committee. The Heads of the Veterinary Department in the main Provinces and the main States.

13267. Your Central Advisory Board will be purely advisory with no executive powers?—Purely advisory.

13268. They would allot funds to you?—They would allot funds. These funds would be for the research work at Muktesar and also for research work which may be found necessary in the different Provinces and which might be done at the research laboratories there. I think our laboratory ought to be staffed and equipped to do local research work as well as to assist, if necessary, in any research wanted by the Central Council. In fact, the Central Council could supply us with men to do their work if they wanted to.

13269. Then the Central Board will have no executive power?—No.

13270. You say that in this Presidency there is no lack of co-ordination between the Agricultural and Veterinary Departments?—No.

13271. Will you kindly tell us the points of contact of your department with the Agricultural Department?—Well, if ever they want any assistance at all or any information or advice they ask me, and I am only too glad to give it. We have a veterinary hospital at the Agricultural College. I go and inspect that; the District Agricultural Officer expects that we should do all their inoculation of cattle. If they want my advice as to whether a bull is fit for service or whether it is a suitable bull to buy I give it. When I visit Hosur I go round the stock and if there is any suggestion I can make to Mr. Littlewood I am only too glad to give it him and to improve my own knowledge by what I can get from him.

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13272. This co-ordination you describe is purely on a personal basis?—Yes, but I believe a great deal follows on the fact that we are independent of each other.

13273. Supposing we take the whole cattle question, breeding, feeding, protection from disease, etcetera?—There is more interest taken in cattle in the Veterinary Department, because in the Agricultural Department they deal with cotton, paddy, sugarcane, entomology, chemistry and so on; cattle-breeding is just one of many things, whereas, cattle-breeding would be an essential work of the Veterinary Department.

13274. At the same time you realise that our Agricultural Departments, while they have to concentrate their attention on crops, do now pay more attention to livestock?—Yes; and I think cattle-breeding is a much bigger subject than any of these other subjects.

13275. Would you like to have cattle-breeding under your department?—I would not object to it.

13276. I understand you have nothing to do with the local bodies?—No.

13277. That is not the case in Bengal?—No.

13278. Do you find local bodies anxious to undertake the responsibility of supporting Veterinary Assistants within their jurisdiction?—They do not support them at all. What we found was when they were under the Local Boards there was always difficulty in getting sufficient support; it is far better under Government.

13279. You say that several petitions have come to you from local bodies?—Yes, because it is no expense to the local bodies at all. If I recommend the opening of a hospital, Government pays for it.

13280. Is it on the score of expense that they do not take sufficient interest?—Yes.

13281. The cost of sera and vaccine is a charge on the provincial revenue in this Presidency, is it not?—Yes.

13282. Not on local bodies?—No.

13283. You supply sera and vaccine wherever necessary to local bodies?—Not to local bodies; they have nothing to do with it; it is to our own men working in the districts.

13284. In the event of the outbreak of an epidemic in a certain village, what agencies have you through which you can get this information?—The village *Munsif* reports the outbreak first of all simultaneously to the Tahsildar and to the touring Veterinary Assistant.

13285. Could you give us an idea of the length of time the information takes to reach you, that in a certain village in Salem district, there is an epidemic?—It all depends upon the disease. Each touring Veterinary Assistant probably has 5 or 6 reports of outbreaks at the same time; he has to judge as to the urgency of the case according to whether secondary reports come in on the progress of the disease, the number of deaths, so that, according to conditions one outbreak may have to wait a fortnight because there may be a more urgent outbreak that requires immediate attention. That is left to the discretion of the touring Assistants.

13286. What agencies have you to meet the demands of the villages for ameliorative and preventive measures?—We have simply the Veterinary Assistant Surgeon, a touring man and if there is a severe outbreak I concentrate the reserve men on any one district.

13287. So you have reserve men?—We have a staff of reserve men for concentration wherever service is most required.

13288. *The Chairman:* Do you ever stop leave?—I do stop leave occasionally.

13289. *Professor Gangulee:* With regard to the Madras Cattle Disease Act, in answer to the Chairman, you said that this Act found its place in the Statute Book in 1866?—Yes.

13290. Do you see any effect of that Act, throughout the Presidency?—The only way in which it has been applied has been that when there is

rinderpest in the district and a large cattle fair is going to be held in the district, in order to prevent that disease becoming disseminated round the other districts we get the Government to apply that Act, and stop the cattle fair. Latterly we have been using it to apply serum-simultaneous inoculation against epidemics.

13291. Was this Act amended at any time?—Not amended except for that one thing, serum inoculation.

13292. When was it amended?—It was introduced last year.

13293. You find there is no difficulty in putting this Act in practice?—The experience we had was that a few of the ryots did require to be prosecuted; there were 187 cases; only a few of them were fined at all; it was only the usual opposition to begin with.

13294. When you have a big cattle-show such as at Tiruppur what agencies have you to control the spread of disease. Supposing a man brings diseased cattle, what do you do?— If the disease is found out, I detail a staff of three or four Veterinary Assistants and half a dozen students of the final year class to attend to any outbreaks that may occur.

13295. You make a reference here to the shortage of serum on account of the system of delivering goods from Muktesar to your place. Do you have any arrangement here to keep a stock of serum and vaccine?—Yes, I have arranged with the King Institute, Guindy, to give me accommodation for 60,000 doses. I also have further arrangements with the Pasteur Institute, Coonoor, to give me accommodation for 10,000 doses in refrigerating rooms.

13296. There is always that supply on hand?—It is not always in store. All that is my working supply. According to the demand I place the order with Muktesar.

13297. What is the usual practice in the villages with regard to the dry cattle which fail to give milk?—They simply turn them out and let them graze about in the village.

13298. They do not send them to slaughter houses?—I do not think that is the practice in the villages. The only place they do that is in the city.

13299. I was looking through your curricula and I find that subjects like protozoology, parasitology, entomology, and bacteriology are all taught in the last year. Do you think that is satisfactory?—No, and that is why I am going to introduce a four years' course. They ought to be taught much of that in the third year.

13300. Because you have got to explain the disease?—Yes.

13301. Do you suggest to changing the diploma into a degree course?—Well that again will require very considerable thought. We do not know whether the Veterinary College will be affiliated to the University or not.

13302. Could you give us an idea of the amount of money you are spending on research?—We have done two good pieces of work regarding infectious lymphangitis of cattle and nasel granuloma. All that was done by our men without any allowance.

13303. Are these two diseases you have mentioned quite common here?—Quite common in the districts. By far the most common epidemic is rinderpest. These two diseases are not of so much importance as rinderpest, but all the same they have to be treated.

13304. My point is, has any research been made on important diseases in this Presidency?—The only research we are doing is on bovine tuberculosis. Bovine tuberculosis, we find, is quite common amongst municipal cattle. Last year there were 22 recorded cases.

13305. Have you introduced any tuberculin test?—In order to find out the incidence of the disease I asked for Rs. 1,000 and I got Rs. 900. I asked for Rs. 2,000 in the next budget in order to carry on that and with the intention of doing some experiments for the Pasteur Institute at Coonoor on rabies, but the Financial Department simply wiped that out and passed the

actuals of the previous year. This work I suggested doing in addition to the college work and for want of support I have had to give it up.

13306. Is bovine tuberculosis common in cattle here?—No, but it is to be found in municipal cattle.

13307. Government do not support you in that?—They gave Rs. 900. For next year I asked for Rs. 2,000 and they gave me Rs. 900.

13308. Besides bovine tuberculosis in the municipal cattle, is there any other disease?—The condition which I want to investigate is the utility of a certain vaccination as a prophylactic inoculation which will protect the dog from rabies for 12 months.

13309. Has that not been done here?—We did two years ago, but the unsatisfactory part of the experiment was that we could not infect the control animals.

13310. We were told yesterday that the hook-worm disease is very common among human beings in the Madras Presidency. Have you found the hook-worm common among dogs?—Yes.

13311. We read that in America they have invented a new method of treatment for ankylostomiasis. Are you aware of that?—Yes, their treatment is oil of chenopodium.

13312. Are you trying that?—Yes.

13313. Now, in regard to indigenous medicines, are they being investigated? —I do not think any special investigation has been made, but the Veterinary Assistants use *neem* oil and various other things which they obtain locally. They obtain various things locally and they supplement their store of medicine with any local medicine which they know is efficacious.

13314. To find out the efficacy of indigenous medicines?—Yes.

13315. *Mr. Calvert:* You are directly under the Minister?—Directly under the Minister.

13316. What is your title?—Veterinary Adviser to Government; I think it is still under correspondence with the Secretary of State whether I should be designated Director or Veterinary Adviser to Government: I do not know which will be decided on.

13317. With reference to the question whether cattle-breeding should be under the Veterinary or Agricultural Department, we have been told that the success in the Punjab is quite an accident, due to a specially qualified member of the Veterinary Service?—I agree with you there in this way, that it would be just a similar accident if it were an agricultural officer who was in charge of it: an agricultural officer might know all about various phases of agriculture and nothing about cattle-breeding. You must have a suitable agricultural man or you must have a suitable veterinary man. It does not matter which, as long as he is a suitable man.

13318. You think the Veterinary Service can produce a suitable man?—Yes; if you get a suitable Veterinary Expert he has got knowledge which no agricultural man has got in the breeding of cattle; it requires minute observation and supervision in cases of disease and so on.

13319. I gather that there are no tuition fees in your college?—No tuition fees, but any private student has to pay Rs. 400 a year.

13320. Your total expenditure is 4½ lakhs?—Not on the college only.

13321. What is the total expenditure of your department?—It is 5½ lakhs.

13322. *Sir Henry Lawrence:* It is 7 lakhs in the last budget?—Yes, 7 lakhs in the last budget.

13323. *Mr. Calvert:* Has anything been done here for horse breeding or mule breeding?—No. The question arose from my remarks in the last report on the Tiruppur cattle show about the poorness of the animals, and I was asked by Government to make a further report on it. I made an enquiry from the only man who had any animal worth the name, the Pattagar of Palayakottai and he explained he was not breeding horses at all now, because there was no

use for them and they were not in demand. All the *Jatka* ponies in the districts have been done away with, owing to motor cars intersecting the country in all directions. Even in the two districts of Salem and Coimbatore, where they have made attempts at breeding horses, there is no demand. The only demand is from private people who go in for imported walers and for a few country breds. There will be a small demand for them, but nothing from a business point of view, I believe.

13324. Is there no scope here for mules as pack animals?—None at all.

13325. *Rao Bahadur Muniswami Nayudu:* Has your department investigated the methods adopted by the people in regard to treatment of diseases?—No; we have made no special investigation. Of course, if any special incident occurred, from a point of interest the Veterinary Assistant would inform me of it.

13326. You know that a very large number of cattle in the country could not be dealt with by your department?—Yes, at present.

13327. And that a number of cattle are being treated by the people by their own native methods?—Yes; they do make an attempt to treat their own cattle.

13328. Do you think it will be advisable to have a special officer deputed to collect information on the methods adopted by the village *vaidyans* in the treatment of cattle diseases?—It might be of interest.

13329. Has your department taken any special steps to do that?—No special steps have been taken. I have noticed that what they do in the case of foot and mouth disease is to stand their animals in clay and water. That is a very good method, but it is very mild in comparison with the treatment we can supply ourselves; it is probably good enough in the absence of others. There may be other cases in which the indigenous treatment may be useful, but we have made no special study of it.

13330. Do you take any steps to deliver lectures to the villagers on diseases of cattle and on the methods of treatment adopted by your department?—Frequently the Veterinary Assistants and the Circle Officers do give such lectures.

13331. Have any of your subordinates or Veterinary Assistants been able to give lectures with the aid of magic lanterns and slides?—No. We have a magic lantern of our own here at the college and lately in the city here we have given lantern lectures on rinderpest.

13332. Do you think that popular lectures with the aid of magic lanterns will have a good effect on educating the people on the principal diseases of cattle and the good work your department is doing in the matter?—I put that up to Government, but I could not put up a good enough case for propaganda work to be carried on by my department. There is so much demand for our Veterinary Assistant that Government say there is no good going into further expenditure on propaganda. The demand for the department is sufficiently great and it takes us all our time to teach the students and to open veterinary dispensaries to satisfy the demand.

13333. Do you publish any leaflets explaining the diseases in the vernaculars?—We publish two or three every year in all vernaculars.

13334. May I know whether, in selecting students for your institution, you see that people from the various language areas are selected?—Yes: I do that. We have a shortage of Telugu men and we give Telugu students preference over Tamilians, because the majority of our qualified men are Tamilians and they dislike being sent to Telugu countries. My object is to level up the proportion and to try and get Telugu men for Telugu countries.

13335. Have you succeeded in that?—Not satisfactorily, but things are improving, and I never miss any opportunity of getting Telugu students if I can.

13336. How many Telugu students were selected this year?—I could not tell you the exact number of Telugu men that we selected this year, but I can find that information for you.

13337. *Sir Ganga Ram:* Is there a book on veterinary science called 'Bazar Medicines'?—Yes, there is such a book.

13338. In English?—Yes, in English.

13339. Where can we get copies of the book?—I could supply you with a book which was issued some 15 years ago; it is called 'Indigenous Medicines.'

13340. Is it for veterinary purposes?—Yes.

13341. Would you send me a copy?—Yes.

13342. If anybody in the rural areas requires the services of a Veterinary Assistant, is there any scale of fees laid down for his attendance?—He must treat them free.

13343. We heard, in Simla I think, that he could charge anything he liked; is that so?—Not for the ryots' cattle; not in the case of the agricultural people. But in a town, if a man wants a Veterinary Assistant to go and to attend to his horse, that is private practice, but in rural areas he is not allowed to do that.

13344. In the case of towns, is there any scale of fees?—There used to be one, but now they have been given freedom of practice, just the same as in the case of the other professional men.

13345. He can charge anything he likes?—He can charge anything he likes; it depends entirely on what the client will pay him.

13346. *Dr. Hyder:* For treatment in the rural areas, would you like a fleet of motor cars equipped with travelling laboratories, so as to cope with the outbreak of any particular disease that may occur?—I think now the supply of motor cars in the rural districts can take our Veterinary Assistants from one place to another quite rapidly. The difficulty I have is in getting men to go direct and by the quickest route. They will, if they can, travel by bullock cart and take 3 to 4 days to get to an outbreak which they could reach in 24 hours. When they do a thing like that, I simply disallow their touring expenses.

13347. *The Chairman:* What is the attraction in doing it?—It wastes time and it pays them better.

13348. *Dr. Hyder:* If there were a travelling dispensary, a motor lorry, whenever there is an outbreak you could despatch them quickly to different centres?—I do not think it is necessary. We could arrive at the outbreak now in quite a reasonable time and take the necessary material with us. I do not think Government would dream of it; they would put it down as an unnecessary luxury.

13349. I was wondering whether your department has made a classification of diseases of animals in this Presidency?—There are many diseases that require investigation; we are not clear on them at all, but the main contagious diseases we have good knowledge of.

13350. I was wondering whether you had such diseases here as, for instance, abortion in cows?—Yes, we have; but very little of it. Our trouble is to distinguish between simple accidental abortion and contagious abortion, but we have not yet discovered contagious abortion in this Presidency. I have tested several animals and sent several blood samples up to Muktesar, and have not yet detected contagious abortion.

13351. Have you come across here what is called Johnes' Disease?—Yes, a little of it, and it has been imported from Bangalore.

13352. Among sheep, have you come across scab?—No, I have only seen that in Scotland.

13353. I was wondering whether there was any investigation carried on here on the relation of grass to diseases of animals?—No, that is a part of work that has yet to be done. Our difficulty is that we have got no research staff at present.

13354. In regard to admission to the Veterinary College, I take it you admit matriculates?—There is no Matriculation in Madras.

13355. Do you admit those who have passed the corresponding examination?—Yes, but if there were to be a course up to 4 years, instead of taking students who have passed the equivalent to the Matriculation we will require the equivalent of the First Arts or the Intermediate.

Mr. D. A. D. Aitchison.

13356. Do you not think it would be a good thing to admit students who have already passed the Intermediate Examination?—Yes; we have actually had graduates come to the college; they were graduates in Arts before they entered the college.

13357. Are you aware that the veterinary services and the veterinary institutes in England are under the Ministry of Agriculture?—They are, certainly, but that is a different thing from the Director of Agriculture here. We are both under the Minister of Agriculture (Development) in this Presidency, but it is quite a different proposition being under the Ministry of Agriculture at Home to being under the Director of Agriculture here.

13358. *Dewan Bahadur Raghavayya:* From the Administration Report for 1924-25, I find that the number of cases treated in the 67 hospitals and dispensaries of the Presidency is 96,000 odd. That works out to an average of about 5 cases a day. How do you account for the small extent to which these institutions are taken advantage of? Is that in proportion to the number of hospitals existing now or existing in that year?—67 hospitals and dispensaries were in existence in the year 1924-25. Those 4 or 5 cases that you see are fresh cases attending daily; you may have actually 30 or 40 animals being treated that day. The report says, " The number of cases treated and castrations performed at all the institutions except the Madras Veterinary College Hospital was 96,740, as against 85,089 in the previous year." One case may be treated 20 times, but still it counts as one case; another case may be treated 5 times it counts as one case; you do not count the case over again.

13359. It means 96,000 animals?—Yes.

13360. Even that seems to be a very small number, about 5 animals a day?—Of course, some are dispensaries and some are hospitals. We have divided the institutions into dispensaries and hospitals, the difference being that hospitals can treat in-patients, whereas a dispensary is never so well equipped and never receives in-patients. Some of our hospitals have as many as 60 cases a day. In certain districts where we have opened new dispensaries, they have worked up to 5 and 6 new cases a day in 12 months. That is satisfactory work, and then gradually the use of the dispensary spreads in that district; it is only very, very occasionally, I think I only remember about 2 cases, where advantage was not taken sufficiently to warrant keeping the hospital open.

13361. The local population have not yet become sufficiently alive to the advantages of those institutions?—Some districts are much more adept at accepting the advantages than others.

13362. Does it not mean that these institutions require more advertising and more propaganda work?—In the local areas sometimes it is so. In addition to that the touring men also do the treatment.

13363. I see they had some about 20,000 to 30,000 cases between them?—Yes.

13364. *Sir Thomas Middleton:* The present course is a 3 years' course, and you have been trying to get a 4 years' course for some time; is that correct?—Yes, I was getting out a scheme for a 4 years' course just when the Retrenchment Committee sat, and Government informed me that they could not think of it.

13365. You yourself entirely recognise that the 3 years' course is unsatisfactory?—It is not sufficient.

13366. What is the length of the course in Great Britain?—It is a 4 years' course.

13367. And those who are trained for public appointments in Great Britain do an extra year for the D. V. S. M.?—Yes.

13368. Is the need for skilled veterinary knowledge any the less among the animals of India than among the animals of Britain?—I do not see why it should be so.

13369. Do you see any reason why it should be greater in India, where disease has been less studied?—I do not see why it should be greater, except in contagious diseases; we have far more contagious diseases here than at Home.

Mr. D. A. D. Aitchison.

13370. It is not the case that the animal diseases of Britain have been much more fully studied than the diseases that you meet with in India?—Yes; and we have got a large field for further investigation.

13371. And the ordinary practitioner in England, if he is in difficulty over a case, or is in a little doubt himself, has no difficulty in getting further opinion on it?—Exactly.

13372. Therefore, for work in this country you really want a higher training?—Just as high as in England.

13373. And you are only stopped from getting that training for financial reasons?—Yes.

13374. *The Chairman:* Did the recommendations of the so-called Lee Commission affect your service? Are you recruiting for the Provincial Superior Service?—No, the recruiting is stopped. The idea now, I understand, is that as each Imperial department man retires his place will be taken by a Superior Provincial Service man.

13375. Superior?—I have recommended that they should be Superior Provincial Service; it should be equivalent to the present Indian Veterinary Service.

13376. I expected you to say that; my question was directed to discovering whether you had commenced recruiting for that Superior Provincial Service?—No. I have got a man in the ordinary Provinical Service, who is a B.Sc. (Edinburgh) in Veterinary Science, and M.R.C.V.S., and yet the best appointment he can get out here is in the Provincial Service on Rs. 250 a month; his education at Home cost him Rs. 25,000.

(The witness withdrew.)

Rev. W. S. SUTHERLAND, B.D., United Free Church Mission, Chingleput, Madras.

Replies to the Questionnaire.

QUESTION 2.—AGRICULTURAL EDUCATION.—The following replies are based on personal experience as Manager (1) of a middle agricultural school located in a rural area (United Free Church Mission Agricultural School, Melrosapuram, Chingleput) and (2) of a high school located in a mofussil town (United Free Church Mission High School, Chingleput) in which agriculture is taught as an optional subject in the Fifth and Sixth Forms for boys appearing for the Secondary School Leaving Certificate Examination, and as a vocational subject for all boys in the Third and Fourth Forms.

(*i*) No. I think that there is an almost untouched field of possible development for the teaching of agriculture in middle and high schools. The Agricultural College should aim at turning out teachers of agriculture rather than, as at present, scientific agriculturists. Classes in agricultural pedagogy should be attached either to the Agricultural College or to Educational Training Institutions. Steps should be taken to include agriculture either as an optional or compulsory subject in all high schools in mofussil areas thus creating a demand for teachers of agriculture. A village elementary school teacher with a "live" interest in agriculture, even if he did not teach agriculture as a subject in his school curriculum, would exercise a considerably greater influence in the village community where he is located. At present the village elementary school teacher is out of touch with the interest of the community among whom he lives and works on account of his purely literary education and this reacts on the school to its detriment.

(*ii*) I consider there is an urgent need for more emphasis being laid on agriculture as related to general education. My experience in high school work would indicate that an ability to appreciate the problems connected with the land is a thing desired by the parents of high-caste boys who are not directly interested in the land. Vakils and others have informed me that they had an indirect interest in ancestral lands in distant villages but through lack of any knowledge of agriculture this interest was restricted to accepting their share of the produce as rent due at harvest time. They hoped that through the elementary training in agriculture being now given to their sons in our high school they would in the future be in a better position to appreciate and guide in the proper development of their lands even though they were for a considerable part of the year "absentee landlords."

(*iii*) Yes, and not only so, but their educational training should be carried on in an agricultural environment. A lad born in an agricultural community but trained in a purely literary environment in an urban school is a hopeless product. The ideal training would be elementary education in the village school followed up by agricultural vocational middle school training in a school located in a rural area leading on to a high school where agriculture would be taught as an important part of the curriculum.

(*iv*) I am of opinion that the demand exists but the facilities are not being given. With adequate facilities a considerable number of pupils in secondary schools would take up the study of agriculture.

(*v*) My opinion is that agriculture should be taught in secondary schools not merely with a view to the possibility of all students who take the subject becoming practical agriculturists in after-life. Agriculture affords a very valuable field for the practical application of those theoretical sciences which constitute a part of the usual curriculum in secondary schools. In the opportunity agriculture affords for practical application of the sciences it should be regarded as of a distinct educative value in itself quite apart from the question of whether all the pupils who study it take up practical farming in after-life.

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(*vi*) If "agricultural classes" refer only to those who are directly engaged in farming the answer to this question is that they are not mainly drawn from this class. Few of this class have the means for high school education. In middle schools where agriculture is taught they are entirely drawn from the agricultural classes.

(*vii*) More emphasis should be laid on agricultural teaching in middle and high schools than at present. In high schools it should be co-related with other subjects such as Botany, Physics, Biology, Chemistry, etc.

(*viii*) (*a*) Nature study has a distinct educative value in elementary schools.

(*b*) School plots should be attached to elementary schools to interest the children in the study of plant life.

(*c*) School farms are necessary for all middle and secondary schools which undertake the teaching of agriculture. Without some lands attached to institutions where agriculture is taught the theoretical training would be of little value.

(*ix*) This is a question which should not carry weight in such an enquiry. A knowledge of agriculture would be of value to all Government servants—especially revenue officers—as well as to others who may follow a professional career but are nevertheless indirectly interested in the land. Many officials after retirement settle down in their native and ancestral villages where they have a greater or less interest in the land.

(*x*) My experience is that it does not need to be made more attractive to the secondary school pupil. Fully 50 per cent of the pupils in a rural secondary school would be willing to take up the study of agriculture if the necessary facilities were provided.

(*xii*) By night schools, occasional lantern lectures and local agricultural shows and exhibitions.

(*xiii*) The teaching of agriculture should be taken up by the Educational Department so far as middle schools and secondary schools are concerned. Its inspecting officers should be specially trained for such work and liberal grants-in-aid should be given to private schools undertaking to include agriculture in their school curriculum.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) I have no means of estimating but probably the total is not more than eight months in the year. He usually does nothing in his slack time unless he is near a centre where he can get cooly work. Some find employment on road repairs. Subsidiary village industries would not furnish a livelihood in themselves but would bring in a small income during the slack seasons and especially in times of famine thus reducing the need for relief work.

(*b*) *Grass mat-making, weaving, rope-making, basket-making, poultry, etc.*—Such industries should be taught in middle schools and co-related to the agricultural instruction.

(*c*) *Bee-keeping.*—The Indian bee is difficult to domesticate and yields very little honey as compared with the European bee. Bee-keeping is not likely to prove profitable on the plains but the matter requires further investigation.

Poultry rearing affords considerable opportunity for development and improvement. There is great scope in rural communities for such work provided it is directed into profitable lines and expert advice and help provided. Facilities for marketing would have to be considered.

Fruit growing is rather uncertain on the plains around Madras. Mangoes are extensively grown but is an uncertain crop. With regard to other fruits even if cultivable it would be difficult to compete with the output from places at higher elevation.

Sericulture.—The heat of Madras plains during several months of the year would be an obstacle to its profitable undertaking.

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Pisciculture.—Water is probably not available in sufficient quantity during the dry season.

Rope-making.—This is done on a small scale for private purposes in most villages. With improved methods and introduction of suitable machines it could be developed. Aloes and other fibre yielding plants grow extensively on the plains. The extraction of plantain fibre for ropes and weaving calls for development.

Basket-making.—It is difficult to compete with the professional basket-makers who are in these parts a migratory caste of gypsies. These make the ordinary cooly baskets. If the manufacture of more elaborate fancy articles in this line could be introduced it might afford profitable work in spare-tme. There is caste prejudice against doing such work in the area around Madras.

Pottery work, at present confined to a particular caste, might profitably be taken up by village agriculturists.

Oil-pressing could also be adopted by many villagers and they might be encouraged to grow oil yielding crops.

(*d*) Such work if undertaken by Government would undoubtedly encourage the growing of a greater variety of crops by agriculturists which would not only be profitable in themselves but would give scope for better rotation.

(*f*) Yes. I think there is much need for such an undertaking.

(*h*) The civic conscience is practically non-existent in rural life. Education with emphasis on civic responsibilities and propaganda by lantern lectures and pamphlets are the only methods that can be suggested.

QUESTION 22.—CO-OPERATION.—(*a*) The co-operative movement among the agricultural classes requires much more supervision than is at present given. Intensive and educative work both from Government and non-official sources, where possible, is more important at present than extensive work.

(*b*) (*i*) Where these are opened in villages so as to include the caste land-holders along with the outcast agricultural labourers, the control of the societies passes into the hands of the caste people who sometimes make it the means of exploiting the labour of the outcasts. Where such mixed societies are formed the outcasts should be given an equal if not a greater representation in the controlling board. Separate societies for agricultural labourers are desired.

(*ii*)—(*ix*) These functions where found necessary should be invested in the credit societies. Purely credit societies are too restricted in their functions and once loans are given they come to be regarded with the same attitude as that shown to the troublesome moneylender.

(*d*) By no means. The members do not know how to utilise them properly and require guidance and help along proper lines.

QUESTION 23.—GENERAL EDUCATION.—(*a*) The existing system of education is far too literary in its aim. It should be made more practical by introducing agricultural training wherever possible. Agriculture in this connection should not be regarded merely as a preparation for an agricultural career but mainly for the sake of the practical interest which it will afford to the study of all scientific branches of study. It will help to produce a more cultured and resourceful citizen. In Madras Presidency the Agricultural Department restricts the Educational side of its function to Collegiate training and has never shown much concern in relating its educative works to the general school grade. The result would seem to be that the entrants to the Agricultural College are lads who have never had any practical preparation for agricultural studies nor have they had their interest in agriculture quickened during their school career. They have come to a stage in life when they have to choose a career and desiring Government service of some kind they find in the Agricultural College a means of entering such service.

(*b*) (*i*) The only means I would suggest is the relating of agriculture to general education as already indicated.

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(*ii*) Education is not compulsory in any rural areas in the Madras Presidency.

(*iii*) Among the lower classes it is largely due to their economic condition. Children are sent to herd cattle when they ought to be in school. The herding of cattle ensures at least a meal a day, whereas attendance at school does not. Small children in the homes have to be looked after while both parents go to work and so children are kept from school for this purpose.

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Oral Evidence.

13377. *The Chairman:* Rev. Sutherland, you are in charge of the United Free Church Mission, Chingleput?—I have been in charge of it.

13378. You have put in a valuable note, for which my colleagues and I are greatly obliged. Do you wish to say anything in amplification of this note before I proceed to ask you one or two questions?—No, there is nothing that occurs to me to say.

13379. You say in the opening words of your note of evidence that your replies are based on personal experience as manager of a middle agricultural school located in a rural area, namely, the United Free Church Mission Agricultural School, Melrosapuram, in Chingleput; is the teaching there in the vernacular?—It is in the vernacular.

13380. Entirely?—Entirely; English is taught in the school; it is a combined agricultural and general educational school.

13381. But this middle agricultural school is entirely vernacular?—It is entirely vernacular so far as agriculture is concerned; the boys are also being taught the English language.

13382. English is taught there as one of the subjects of the curriculum?—Yes, it is a general education school as well.

13383. You say, "and (2) of a high school located in a mofussil town (United Free Church Mission High School, Chingleput) in which agriculture is taught as an optional subject in the Fifth and Sixth Forms." There again, I take it, following the usual practice of the country, English is the medium of instruction?—English is the language by which it is taught in the Fifth and Sixth Forms.

13384. Are all subjects of the middle school, other than agriculture, taught in English?—All the boys who study there are from the backward classes, who do not know English.

But certain of these boys after they go through this school, may go on through high school education and we do not want to block the way for them by keeping English back as it were.

13385. Precisely. What proportion of the boys who pass through the middle agricultural school are of the backward classes?—They are all of the backward classes.

13386. Practically all?—Yes; it is a Mission School established principally for our Christian people in those villages and they are drawn largely from the backward classes.

13387. Is there a demand, in your experience, for education of that sort on the part of the agriculturists, that is to say, on the part of parents of boys not members of the depressed classes?—Since the agricultural classes have been started in the high school, the classes have become more popular. It is only four years ago that we began taking up agriculture in the high school. I think in the first year there were one or two out of these who joined the class, the second year there were four, in the next year 18 and this year 22 or 23.

13388. Would you say that the agricultural teaching in the middle school is of a more efficient nature than the agricultural teaching in the high school?—It is more practical. There is a farm attached, whereas in connection with the high school a number of other subjects are prepared for the School Final Examination and agriculture is only an optional subject.

13389. Would you call the first a vocational school?—The first is a purely vocational agricultural school.

13390. The second is definitely not?—It is definitely a high school in which agriculture is an optional subject.

13391. In which agriculture is an optional subject and, when it is taught, it is taught not perhaps so much as a vocation but as a means of education and of turning the boy's mind towards agriculture?—Exactly so.

13392. How many hours a week of practical agriculture do you give in the high school?—As a matter of fact in the high school there is not much time for that. The boy's time table is pretty full up with other things. He has got to study History, English, Mathematics and various other subjects; but we generally try to give them two or three hours a week for practical agriculture. They have the theoretical class every day.

13393. What does that theoretical teaching amount to?—They follow the curriculum drawn up by the Government, which is same as the Secondary School Leaving Certificate curriculum. Agriculture is one of the subjects of that scheme.

13394. Now do you think there is any demand on the part of the cultivating classes for vocational vernacular middle schools among depressed classes?—I think if they realised what it is, there would be. At present they do not realise the need for that type of education, but if the schools were established and they begin to appreciate the object of such schools, there would be.

13395. Do you think it is possible to give that type of teaching in its best form without blocking the road of the boys who go to such a school, *i.e.*, blocking their road to higher education in the University?—Yes, I think so, it is quite possible.

13396. You think it can be done?—It can be done; that is our aim in the middle school. We make the education such that the boys can go right on into the high school.

13397. Can you give us any particulars as to how many have gone?—About two or three go to high school every year.

13398. It is not a bad proportion. Out of how many boys?—We had about 50 boys in the school and you have got to remember that these boys are drawn from the depressed classes whose intellectual capacities are not great and we can send only such boys that show ability for higher education.

13399. How many leave the school every year?—Certain of these boys do not go on to high school; they are taught up to the Second or Third Form, which enables them to practise training as teachers.

13400. But how many boys, altogether, leave the school every year?—About 6 or 7, I should think.

13401. Of which two or three go on to the high school?—Yes.

13402. Do these boys pick up sufficient English early enough in life to take full advantage of teaching in English later on?—It usually means that the boys lose a year after their training through being in the middle school. They cannot enter the high school at the standard they left in the middle school. They are backward in English. They are not able to give much time to English in middle school.

13403. When was this middle school established?—About 50 years ago; it was started as a purely agricultural school and for many years it did not take up general education. It was not a success as a purely agricultural school. About 8 or 9 years ago I stopped that and made it a general educational school and took boys straight in from the villages into the school. Before that it was a case of boys who had gone to the high school and were probably not found fit.

13404. You have got failures?—We have failures and they regard it more or less as a penal settlement for having failed. It was not a success as a purely agricultural school. It is now a general educational school.

13405. When did you make the change?—About 7 or 8 years ago.

13406. So you have had plenty of time to see how it was going to work?—We would like to have more time.

13407. Have any of your boys of the middle school gone on to the University?—No; very few of these have the capacity for University training.

13408. In your experience, would it be possible for a boy of sufficient capacity to lose that year that you have spoken of as a result of learning English late and to get into a University to take his degree? Are the two things compatible?—If you have a boy who is brilliant, he can go straight

on. But you have got to take an average boy and the intellectual abilities are very low.

13409. And the loss of that year would be a tremendous handicap?—I do not think it is very much for the class of boy I am thinking of.

13410. Have you any views about elementary education, other than the general effect of your argument here upon that?—The Mission with which I am connected, in conjunction with other Missions, is seeking to make the village schools more vocational, that is, to teach the boys village industries.

13411. Which do you think ought to be the main objective in elementary education, vocational development or the attainment of literacy?—I think you ought to combine both if possible. The school curriculum should not be drawn up so as to bar any boy having ability from going on for high school and University education. At the same time you want a certain amount of vocational work in order to test the abilities of the boys. Certain boys may not have the ability for high school education, but they may have practical turns which can be observed and the boys may be guided as to what they are to take up in after-life.

13412. Does that mean control in elementary schools or primary schools? How long do you find that the majority of your boys stay in these primary schools?—The infant class is usually a very large class and the next standard is about 50 per cent of it.

13413. Fifty per cent leakage?—50 per cent leakage.

13414. And the next?—The next is probably another 50 per cent. That is, in the village school of 30 boys you would probably have 3 or 4 in the 4th standard, and 5 or 6 in the 3rd standard.

13415. Of every 100 entering the infant class, how many attain literacy?—I am talking of the depressed classes only now. 5 per cent, I think.

13416. 5 per cent attain literacy?—Yes.

13417. And how many retain literacy?—I think 5 per cent.

13418. You do not think they relapse?—No.

13419. Can you give us any figures of classes other than depressed classes?—I am afraid not. We have some schools for caste students; but it is a high school where you have select boys, who are sons of officials and others.

13420. Are you attempting anything in the form of adult education or night classes for adults?—We have night schools in most of the villages, but the adults do not come to them. It is largely children who are not able to attend the school during the day because of their work that come.

13421. Is it good for them to sit up at night? What is their age?—It depends on the village. In certain villages the night schools consist largely of students who ought to be in the day school. In other villages you get bigger lads of 18, 20 or 25.

13422. Can a child's constitution stand up against the work of the day and school at night?—The day work is not much, sitting under the tree and looking after the cattle; it is not hard manual work.

13423. They do not come tired?—Sometimes they are inclined to be sleepy, but I think they are able to follow the lessons and make good progress.

13424. But you have no adult education as such?—No.

13425. Have you ever considered the possibility of any such education?—The night schools are open to adults and, as I say, in certain of these night schools we have lads of 25 reading.

13426. Are they easy or difficult to teach at that age?—You have only two hours in the evening to teach them and you cannot expect them to make as much progress as children of day schools; but what progress they make is good.

13427. They learn to read and write?—Yes.

13428. Does it take the average young man long to do that?—About 3 or 4 years.

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13429. 3 or 4 years in a night school before he can read and write?—Yes, if he attends regularly. Our great difficulty with the village school is the irregularity of the children and the adults. For a time it may be popular to attend the night school; after a time they cease to attend. A great deal depends on the teacher and on other attractions.

13430. Is the teaching in English or in the vernacular?—Vernacular entirely.

13431. I see, on page 402 of your written replies, that you express an opinion upon the value of agricultural knowledge in officers of the public services other than the Agricultural Service. Has it ever occurred to you that a degree in rural economy at the University might be helpful in that direction?—I should think it would, but my experience is entirely with the middle school and high school boys. My feeling is that agriculture as a subject is related with all the other subjects and it gives a practical turn to other studies.

13432. Have many of your middle school boys gone back to cultivation as a profession?—Some of them, yes.

13433. Can you give us the proportion who go back to the field?—The proportion that will go back to the field will consist mostly of the boys who are not very bright. The boys who do best have other openings for them. They become teachers in villages and some of them go on to the high school.

13434. So that, even in the case of the depressed classes, the fact stands that the tendency of education is to drain the land of the better brains?—Exactly; I think so.

13435. Have you ever considered the possibility of devising a system of education which would not have that effect?—The vocational school has the effect of giving the boys who attend it some practical training even if they go back to their villages. They can benefit by what they have learnt at school. That is, the boy who is not fit to go on to a high school if he has been at a vocational school has learnt practical things which he can put to use.

13436. But, on your own showing, the greater part of even your middle vernacular vocational school boys find occupation away from the farm?—We as a Mission require a certain number of these boys as teachers in our rural schools and we absorb them as such in the Mission schools. The other Missions also employ our boys.

13437. Have you a system of settling the sons of depressed classes on the land? Have they an opportunity of returning to cultivation?—We have three settlements in the Mission district of which I have been in charge. The land is fully occupied by old settlers who have been there for the last 20 or 30 years. There is no land available for the boys we turn out now.

13438. So that the questions which I put and the answers you gave have got to be read in the light of the fact that these boys from the depressed classes have, for the most part, no opportunity of using their vocational knowledge as tillers of the soil. Is that the position?—The system that prevails in the villages is that the man of the depressed classes is usually the cultivator and not the owner of the land. The boy's parents may be responsible for the cultivation of a certain number of fields which are the property of a caste man, a Brahmin or Mudaliar.

13439. He works as a rule as an agricultural labourer?—No, he gets a share in the harvest, half or one-third, as the case may be.

13440. As remuneration?—Yes, he is responsible for manure, for seed, for supplying everything, and at the harvest time the landowner comes and takes away half the income.

13441. You distinguish between the agricultural labourer who works for a wage and the man who labours on the soil and who is remunerated in kind?—Yes, there is a difference I think. The man who cultivates for a share of the produce has got a hold on the land, a tenure on the land which Government recognises just as much as the landowner.

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13442. If that is so, has he anything which he can leave to his son in the way of right?—I think so.

13443. Can you speak as to the details of that fact?—It is quite common in South India. It is the universal practice I think in most of the villages with the caste people on the land. When the caste people own the land they ask one of the depressed class men who has had the *Kudivaram* right as distinguished from the *Melvaram* right to cultivate the land. I do not know if that is communicable from father to son. I think it is.

13444. *Dewan Bahadur Raghavayya:* Is he not a tenant-at-will on the East coast?—He has got a hold on the land. I am subject to correction. I believe that is the position.

13445. You are referring to the zamindari tenants. In the ryotwari tracts there is no hold on the land except in Malabar?—I think it is different here. If he is turned out he can go to court.

13446. *Sir Henry Lawrence:* Which district are you speaking of?—Chingleput.

13447. *The Chairman:* In the case of the district you are familiar with, is the practice to depend upon the total yield or a fixed sum?—Total yield.

13448. *Dewan Bahadur Raghavayya:* So that he has no incentive to increase the total yield?—On the contrary, the system discourages the man from improving his land. If a man manures his soil and spends 30 or 40 rupees on improving the soil he gets an increased output of 60 rupees and the landowner takes away 30; so he is no better off. The owner gets his share of the improvement without putting anything into it.

13449. I gather that you regard your middle vernacular vocational schools mainly as a training ground for teachers?—For teachers and for such boys who may not have the intellectual ability to become teachers. If they go back to their villages they know something of agriculture and they can appreciate the pamphlets of the Agricultural Department in the vernacular and they have an open mind to improve agriculture.

13450. Have you any accurate account of the careers of your boys since you made arrangements for the change in the curriculum of the school?—No, I have not worked them out. But I know from personal knowledge that some of the boys are cultivating their own land.

13451. They have gone to their lands?—Yes.

13452. Are you satisfied that the result of your training has been to improve their own efficiency?—They grow better crops.

13453. You feel no hesitation in saying that?—No.

13454. Do you think that they themselves appreciate the fact that they have benefited from the course at the school?—I think so.

13455. Have you felt any demand from the cultivators or owners for such teaching themselves once they have seen that better crops result from this teaching?—Well, in the case of boys that I am thinking of, they are on Mission lands in some of these settlements. After being in the settlement they have succeeded to their fathers' lands in the settlement. A number of outcasts do own their own lands.

13456. I have some questions on education to put to you. Do you think it possible to do much more than infuse what is called an agricultural bias into the elementary teaching without running the risk, in some degree, of prejudicing the prospects of literacy. Do you think there is time to do more than that?—I think so. I think that the training in agriculture is an education in itself.

13457. I am talking of elementary education?—My experience is based on education in a middle school which has also a boarding home. All the children are living there in the hostel.

13458. What is their age?—They come there at 9 or 10 and continue till 14 or 15. They go to the ordinary village school at about 6. Our method is, the best students in the village schools in the 3rd or 4th standard

who show interest in the lessons are brought to these schools, and continue there for 4 or 5 years and then are sent on to the high school.

13459. In your view the attainment of literacy is the first objective of education in rural areas?—I do not think it is. If he wishes to make a good citizen, he would take an interest in the affairs of the community.

13460. You do not regard literacy as the channel from which these other advantages flow?—It is not the only channel.

13461. Have you had close personal experience of the co-operative movement?—We have several societies in the villages in which I work and in which I have been interested.

13462. What nature of society?—Credit societies.

13463. You are satisfied with the services that they are rendering?—No, I am not satisfied. I do not think they are doing as much as one would like them to do. For one thing, when a society is established in a village it falls into the hands of the caste people. I think I mentioned that in these remarks and I have heard of cases in which outcast men will not get a loan unless they promise to sell their labour to the caste man who is a member of the panchayat, at a lower rate than he can get in the market.

13464. Otherwise they will not get the loan?—Quite so.

13465. What about the annual general meeting? Is there any meeting at all?—I have been at a meeting in which the Director sat on one side of the street and the outcast sat on the other side of the street.

13466. One man one vote, I suppose?—But if he exercised his vote contrary to the wishes of the wealthy members of the panchayat, he would probably get no land to cultivate.

13467. That is to say, he cannot exercise his vote?—He has got to exercise it in favour of the panchayat in his own interest.

13468. Do you think the notion of a co-operative organisation as a means of raising the general tone and outlook of the rural population has been appreciated at all?—I think so. It has been appreciated by the people in the villages from the point of view that they get money at a very much lower interest; but I do not think the supervision is adequate; they simply ask for loans because loans can be got; they do not always use them for useful purposes; they very often loan out themselves to somebody else who pays them higher interest.

13469. And you are convinced that in the present state of progress further expert supervision from outside is required?—I think so.

13470. You do not think that a co-operative credit society which has greater means of placing facile credit is likely to improve in the long run?—I do not think so unless a man is trained how to use his society for his own benefit.

13471. Can you give an idea as to how many credit societies you have been familiar with?—20 or 30. They are all of the depressed classes.

13472. Of those, can you point out a single one which is conducted on a thoroughly satisfactory basis?—No, not one.

13473. Have you any experience of co-operation in rural areas amongst peoples other than the depressed classes?—No, except in certain villages where the co-operative societies serve both the depressed classes of the village and also the higher castes.

13474. Have you experience of co-operative societies designed to undertake the financing of new village sites for depressed classes being settled on Government uncultivated lands?—Some years ago I tried an experiment with regard to one of our settlements. We arranged that the co-operative society should take the whole settlement from the Mission before the land was given to individual cultivators on the *varam* system; that is, they paid us a certain proportion of their harvest. That was very unsatisfactory; they could not pay the money. We did not even get enough to pay the Government tax. Some years ago we organised a co-operative farm society in which the co-operative society paid a fixed rent for the whole of the settlement

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to the Mission and they themselves ran the whole settlement. That was arranged through the Co-operative Department and the Agricultural Department. The local officials took an interest in the formation of the society, but unfortunately the officials who were there at the time of the organisation were transferred. I think we made certain mistakes to begin with. The agricultural officer advised the growing of crops which were not suited to the village and that rather discouraged the people.

13475. Do you think there is a considerable body of opinion which holds that one way of advancing the true interests of the rural population is to attempt some revival of the ancient system of communal government, that is, self-government by the panchayats or some such bodies?—Yes.

13476. Do you think that is a feasible proposition?—Yes, to a limited extent.

13477. Do you think that, in the case of education, to which we are addressing ourselves, an attempt to hand over the function of general direction and general administration of educational matters to panchayats will be fraught with success?—What may seem right from a theoretical point of view may not be right from a practical point of view. I do not think from a practical point of view it would be a success, though one would like to see that.

13478. Where do you think the weak spot exists in that scheme?—I do not think that, in the agricultural areas, the standard of education among the village people is sufficient to undertake anything of that sort.

13479. What do you think of the calibre of teachers in the village schools on the average?—They are of rather poor material.

13480. In your experience, are they of the rural population or are they of the urban population?—Rural, largely, in the elementary schools.

13481. A good deal is said about the teaching of nature study; do you think the teaching of nature study to a small class of twenty children is a difficult or an easy thing?—That depends upon the teacher.

13482. Do you think it is easy or difficult?—For a good many teachers it would be difficult; they do it in such a wooden way that it is better for them not to do it at all.

13483. Do you agree with me that it is a good thing?—I think nature study is a very good thing in the elementary schools.

13484. You rather agree with me that you could not have a more complete test of teaching capacity than the capacity to teach nature study?—I agree with you.

13485. What proportion of the rural teachers is fit to take a class out and give half an hour's teaching on nature study?—That would depend upon my standard; if it is to be attempted and done in a fairly satisfactory way I do not think any of them would give a real and proper lesson in nature study.

13486. A man must learn first before he can teach others?—Exactly.

13487. *Sir Henry Lawrence:* Have you any experience of the men of the depressed classes who have gone overseas and come back to this country?—Yes.

13488. Do they improve their intellectual standard or their economic standard by so doing?—Decidedly they do.

13489. Are they better or worse citizens after they return?—Well, I would not like to generalise; some of them are very much improved by going to the hills, and to the tea plantations where they make money. And when they come back they spend their money in educating their children. I know of a case just now where a *kangani* has returned to his village from the tea estates and has given Rs. 300 for building a school in his village, which is half the cost of the building. I find there are others who spend their money on drink and are worthless; they demoralize other young lads of the village. So that, you cannot very well generalise, but I think on the whole it is good.

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13490. Have you any such men who have gone overseas to Burma or Ceylon?—There used to be a number of them who came back from Natal; I do not know about Burma; a few have come back from Ceylon also.

13491. In their case, are they better or worse?—I think economically they are better.

13492. Have you any views on emigration elsewhere, for example, to Fiji, Guiana, or other countries? Have you any experience of that?—I always encourage the people in the villages who are very poor to go to the tea estates in the Nilgiris; it is a very good thing; they get very good wages, and they come back better off.

13493. You approve of this sort of seasonal migration?—Yes.

13494. As regards the question of drink you spoke of, have you made any estimate as to the amount that is spent on drink by these classes?—No; I have never made any estimate. The people among whom I work are not officially allowed to drink; but it is an evil we are always up against.

13495. What about people outside your immediate converts?—I do not think it is as great among the depressed classes as is sometimes imagined. It is common among the lower classes, but there are also a number of caste people above the depressed classes among whom drink is prevalent.

13496. Has any inquiry been made to show what proportion of their wages is spent on drink?—No.

13497. *The Chairman:* Are all the boys in the schools you describe Christians?—Not in the high school. In the high school quite a number of boys are sons of officials, *vakils*, lawyers and such like. I got a teacher the other day to make a list of the present boys showing what their composition is. At the present time we have in our Fifth Form 22 boys studying and fully 50 per cent of them have land of their own; one boy's father owns 500 acres.

13498. I asked whether they were Christians?—No; they are not Christians; some of them are Christians but not all of them.

13499. In the middle school they are all Christians?—They are all Christians of the depressed classes.

13500. *Sir Ganga Ram:* Is your institution something like Mr. Higginbottom's?—I merely aim at the high school standard; he aims at a University standard.

13501. Have you any land attached to your Mission?—Attached to our vocational middle school we have got 30 or 40 acres.

13502. Have not Government helped you by the grant of some land for this purpose?—The whole of the land where the school is and the land for the settlement was originally granted by Government about 40 years ago.

13503. Is it dry land or wet land?—It is dry land; we have dug wells and improved the land that was waste jungle.

13504. It is nearly 40 acres?—We got 75 acres at that time from Government and we have retained 30 acres for school purposes and utilised the rest for the settlement.

13505. Do the depressed classes come to the high school?—Yes.

13506. Do the other castes mix with them quite freely?—Yes, quite freely.

13507. There is no caste trouble?—No.

13508. In the Punjab very large areas of good land have been given to the Salvation Army and to Missions for this purpose?—Yes.

13509. You have given a list of the industries suitable for the male population. Do you do anything for the female population?—We have lately begun lace-making.

13510. You do teach them?—Yes.

13511. Anything else?—No, not for girls.

13512. Do you teach them practically?—Yes; they make lace.

13513. On a commercial scale?—Yes.

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13514. What amount can they earn?—A good lace-maker can make Rs. 10; Rs. 5 to Rs. 6 is the average.

13515. Do you teach weaving?—We have weaving in the vocational middle school as a sub-industry; we have a couple of looms there.

13516. Do you teach them carpentry?—We teach all our boys to use the chisel.

13517. Not regular furniture-making?—No; we do not.

13518. There will be a great demand for them overseas if you teach them carpentry?—We are working among the agricultural classes; if you take a body and teach him to weave, he is up against the weaving caste.

13519. I am thinking of emigration; you will help them a great deal if you teach them carpentry which can be learnt in one or two years?—We teach them to use the hammer and the chisel and to prepare their village tools.

13520. The Punjab carpenters are in very great demand; they get very good wages?—I see.

13521. *Sir Thomas Middleton:* Boys from the primary school go to the middle school at the age of ten. When do you begin teaching them agriculture?—They begin rightaway; they go to the fields, sow, reap, water the lands, and do various other jobs. I think a little later they join the agricultural theoretical class.

13522. About the age of 12?—Yes.

13523. And for how long are they in that class?—They go on till they leave the school; a great deal depends upon the stage the boy has reached in his literary education.

13524. He may be in the agricultural class for anything from one to three years?—From one to five years. The boys get scholarships from the Industrial Department for five years; they are generally expected to stay five years.

13525. Some of your boys will leave the middle school at the age of 16?—About that; 16 or 17.

13526. When they enter the agricultural class are they able to read easily in the vernacular?—Yes; I think they are able to read pretty well.

13527. Who teaches them agriculture?—We have the Superintendent of the farm; he was trained at Coimbatore, which is practically a diploma course.

13528. And he takes the theoretical part?—Yes, and he is also responsible for the farm work.

13529. How are they provided with reading material, text-books and so on? Do you use bulletins or leaflets issued by the Agricultural Department?—They are supplied to the farm, but you mean the class books?

13530. Have you any class books?—There is one class book in the vernacular, in Tamil, "Benson's Indian Agriculture"; it is very much out of date, still that is the only book which is available at the present time.

13531. Would you agree, then, that there is great need for a more modern and suitable book for the class?—Yes, but the Superintendent knows English very well, and we supply him with a good many books in English.

13532. He translates them?—Yes.

13533. At that age, note taking is a very slow process; without printed material, it must be a slow business getting the boys through any considerable course?—It is not like University lectures.

13534. I know, but how is the teaching done?—It is largely practical work, and the boys are encouraged to study natural history by collecting specimens, and the teacher talks to them about what they bring in.

13535. He would tell them about the crops grown, and what sort of treatment different crops required and so on?—Yes.

13536. And all has got to be done with the help of an old text-book and such notes as the teacher may give them?—Yes.

13537. You agree that even if the boys do not return to the land from the middle school, they could be absorbed as teachers, and that they would be very useful members of the community?—I think so.

13538. The object of your high school training is to interest in agricultural subjects classes who are not actually engaged in agriculture; that is my reading of your memorandum?—That is one of the effects of introducing agricultural classes.

13539. The agricultural class has gone up rather rapidly in numbers, up to 23 in 4 years; what is the percentage of passes? Has it been very satisfactory?—Very satisfactory; taking the marks, the average mark for agriculture is something about 35 or 40. I forget exactly what the figure was, but it is above 70 per cent. It is above the average for the Presidency.

13540. So long as your percentage of passes is satisfactory, you may expect that the class will increase rapidly?—Yes, it is an inducement to the boys.

13541. *Dr. Hyder:* I want to ask you whether, apart from the humane and civilising agency of the Church, there are any other agencies engaged in welfare work among the depressed classes?—In the particular area in which I am working?

13542. In that particular area, or among the depressed classes generally, is there any such agency apart from the Church?—I have not come across any in Chingleput.

13543. Do the members of the depressed classes in the area with which you are familiar complain to you that they do not get their fair share of the water from Government canals?—Not very frequently.

13544. Have they complained to you that they do not get their fair share of the grazing areas which have been placed under the panchayats?—No, I do not think that we have had complaints of that sort.

13545. What is your opinion about the drink evil among the depressed classes? Is it increasing or decreasing?—I think it is increasing, judging by the income that is got from toddy shops.

13546. *Sir Ganga Ram:* How increased?—By the rent paid by the lessees of toddy shops; that is talking of drinking in general, not of the depressed classes; a toddy shop right out in the village will pay Rs. 100 to Rs. 200 a month as rent to Government.

13547. *Dr. Hyder:* Are you aware that the declared policy of the Madras Government is the policy of minimum of consumption with the maximum of revenue?—Yes.

13548. My question referred particularly to the depressed classes. Would you regard it as a sign of prosperity, that they are getting more money and spending more on drink?—I do not know whether it is a sign of prosperity; I suppose it must be. I recently had a petition from a certain hamlet of the outcast; they asked me to take steps to represent to Government to get the toddy shop removed, because they said when they came home in the evening with money in their hands they could not pass this place without spending it on drink. They themselves sent in a petition which I forwarded to the Collector, and the toddy shop was removed from that place.

13549. *The Chairman:* You have given the fact that higher rents are being paid for toddy shops than was the case some time ago. Is it within your knowledge that the number of toddy shops is being reduced as a deliberate policy?—It is not within my knowledge; I have tried to get some shops removed, but I could never get them to do so.

13550. Is their number being reduced at all in the district with which you are familiar?—I do not think so.

13551. Do you not think there are fewer of them than there used to be?—If there are fewer, it is very little less.

13552. If there were fewer of them, it would not surprise you if rents had gone up?—No, I suppose it acts in that way.

13553. *Sir Henry Lawrence:* Was this shop that you referred to closed?—It was removed from that quarter.

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13554. *Dewan Bahadur Raghavayya:* Is it within your knowledge that the revenue from toddy is also going down, both under country liquor shops and under tree tax?—I do not know; I have not studied it.

13555. There has been a fall of over 15 lakhs in one year. You say that you are giving vocational agricultural education in the Third and Fourth Forms of the high school at Chingleput?—Yes.

13556. Is it very different from the education which you give in your vernacular middle school at Melrosapuram?—In the Third and Fourth Forms they teach agriculture as required by Government as a vocational subject; that is where the boys are expected to do work with their hands, giving an opportunity for practical work; and in these classes the boys go out to the field and work; there is no theory taught there, but they are taken out by the teacher, and when there is a wet day or for any other reason the class cannot go out to work in the open air, he talks to them; but in the Third and Fourth Forms it is largely practical work.

13557. That is the sort of education given in the vernacular middle school as well?—Yes; in the vernacular school we teach them theory as well; they have a regular class for theory.

13558. Practically, it is the same sort of education?—Yes.

13559. You have had some boys passing through these Third and Fourth Forms in the high school at Chingleput?—Yes.

13560. Have any of them dropped out after the Third Form? Have any of them gone back to the land instead of going on to the Fifth and Sixth Forms?—I cannot tell you; I have not got the statistics.

13561. Can you recollect any such case or cases?—I might explain that I have not been manager of the school for 2 years; I am at other work now and am not at present in touch with the school.

13562. My object in putting that question is this: supposing you come up to the middle school standard, when the boy passes the elementary stage and comes into the First Form and from the First to the Third Form, if you give him practical education in the vernacular in agriculture in the general school, would the extra year, that you refer to as necessary for equipping him with the necessary knowledge to go on to the high school, be a very great handicap to his going on to the University?—I do not think so.

13563. The average age at which a boy passes the school final at a school of general instruction is 16, is it not?—Yes, 16 for a boy who has been at a high school from 6 years of age, but you must remember that the boys I have been dealing with are boys who have been in a village school to begin with, and they probably stayed there longer than they ought to have, because of the conditions of the village schools, and these boys have come on later into the middle school.

13564. That is, boys of the depressed classes?—Yes.

13565. I am referring to boys who do not belong to the depressed classes; they generally come to the school at 6 or 7?—Yes.

13566. In the case of those boys one year would not matter much.—Those boys will not lose one year; it is only in the case of the boy in the middle school in Melrosapuram coming on to the high school that he would lose one year because of his English.

13567. Even in spite of the fact that they take agriculture as a vocational subject in Forms III and IV, you say they need not have an extra year to get sufficient equipment in English to pass on to the University after matriculation?—No; the vocational training given in the Third and Fourth Forms only amounts to about 2 hours a week, two periods a week in some classes; it does not interfere with their progress in other subjects

13568. Do you think that sort of education is enough to give the student who passes through this school of general instruction an agricultural bias?—No, I do not think that is adequate; it must be taken up more seriously.

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13569. Why do you call them vocational classes?—That is the name given to them by Government. The Madras Government, a few years ago, encouraged managers to start vocational classes of all sorts, and I at that time started agriculture in the Third and Fourth Forms. Before that, I had the Fifth and Sixth Form boys studying agriculture as an optional subject, but I took it up in the Third and Fourth Forms when Government asked us to introduce this vocational training.

13570. In your opinion, is this education that you give them in the Third and Fourth Forms a very useful piece of education?—It is slight. It is useful in giving the boys a rest from class studies for one period in the day; they get out into the fields, get fresh air and study plant life, but it is not serious agricultural training.

13571. Does it quicken their interest in agriculture at all?—I think it does; I think it ought to.

13572. Next as to the tenant acquiring the right to cultivate his land. I am not discussing the policy of it. I do not say that it is not desirable to give the tenant the right of permanent occupancy; but are you sure that occupation for 4 or 12 years gives the man an inalienable or inheritable right in the land in these districts?—I understand it does.

13573. Has it been tested in a court of law?—I think so.

13574. It is within your knowledge?—I know that when a landowner wishes to get rid of his cultivator, he tries to move him about from field to field; if he has 2 or 3 fields in his land, he puts the man who is cultivating one plot this year on to the next plot next year, and so keeps him moving, so as to prevent him from getting his tenure.

13575. You are referring to the landowner's apprehension?—The landowner fears that if for 11 years the man is cultivating the same plot, the cultivator gets that right and he cannot turn him off.

13576. It is within your knowledge that it is the policy of Government to reserve lands in every district for assignment to the members of the depressed classes?—Yes.

13577. Has any attempt been made by your Mission to obtain more land in the Chingleput district for your settlers?—Just recently I have applied to Government and they are going to assign some acres of disafforested land; but there has been difficulty in the Chingleput district on account of the *mirasi* rights, which has interfered with Government in assigning the land.

13578. In your written memorandum you say that fruit-growing is rather uncertain on the plains around Madras; that mangoes are extensively grown but it is an uncertain crop. Do you mean to say that the mango is more susceptible to seasonal changes in regard to yield than other fruit trees?—Yes; some years you get a heavy crop of mangoes and other years, without any reason, the mango crops seem to fail.

13579. Does not that apply equally to other crops?—No; I do not think so. We grow jack trees and that is a steady crop; coconuts, too, give a steady income, but you cannot rely on mangoes giving a steady income year by year.

13580. Is it not within your knowledge that in the adjoining district of Chittoor they grow sweet limes and sour limes very extensively?—I think I have heard they do.

13581. Do you think it would be possible to extend the cultivation of those fruits to your district?—I think so; I think it is quite likely they might do very well.

13582. I believe the banana can be grown very successfully?—We grow banana; I did not regard banana as a fruit tree, but I suppose it is.

13583. *Sir Ganga Ram:* Have you any lac cultivation?—No.

13584. *The Raja of Parlakimedi:* What home industries do you teach your boys and girls?—On the farm we teach them weaving, fibre extraction from certain plans; we do plantain fibre extracting, also and coconut fibre; they

make ropes and baskets; they are taught to use the potter's wheel, and we try to introduce any little industry that comes along.

13585. Carpet weaving?—No; ordinary *dhotis* and *saris*, towels and such like things.

13586. Do you encourage any of these coir industries?—No; we make rope only; we have not sufficient time to teach the boys all these things. We give the boys a choice; if a boy shows a gift for weaving we allow him to work longer on the loom; we allow him more time on whatever he shows a gift for. You cannot teach every boy everything.

13587. Do you not encourage sericulture as a subsidiary industry?—I do not think it would do in Madras.

13588. It does well in parts of the Madras Presidency and under the same conditions can you not do it?—Some years ago I enquired into the possibility with regard to Chingleput in particular and I understand the heat in two months of the year is so great that it would actually kill the moths or worms.

13589. Has it ever been experimented on and tried?—I have not heard of anybody trying it; you would have to buy new seeds every year.

13590. In your agricultural training do you include also kitchen-gardening, growing vegetables?—The boys grow vegetables for their own use. It is right out in a village area where there is no market for selling the vegetables.

13591. Have they any extras to sell?—They do sell a little vegetables and ropes to the villagers around; they do not send any to Madras; they get a sale for everything they make on the spot.

13592. How is the money utilised, the money got by selling these things?—That goes for the maintenance of the school. The boys are boarded free and the income that they make by these industries goes towards their board.

13593. Is any encouragement shown, by presents or anything of that sort, to boys showing greater efficiency?—Yes, prizes are given; we encourage them in every possible way. We also make grass mats there; that is another industry we teach.

13594. What do you use the grass mats for?—They are coir mats which are used to sleep on.

13595. Is enough attention paid to the local crops of the district of Chingleput? Do you concentrate upon anything particularly?—We grow various kinds of paddy; we try some of the better varieties. Sugarcane we grow to a certain extent. We began growing Cambodia cotton but gave it up, not entirely because of the trouble with disease but because we could not get it ginned locally. We were the only people locally who were growing it so that we should have to send it down south for ginning. There is not sufficient growing in this area to make it pay an individual ryot to take it up.

13596. So you adopt all the improved methods of cropping, manuring and so on, necessary for each crop, as recommended by the department?—We try to follow their views as far as possible.

13597. Do you hold competitive examinations?—Yes, they go in for the Government technical examinations in agriculture. They are held once a year and we send the boys up for these examinations; they get class prizes for their work.

13598. Is anything set apart separate for the depressed classes? Are they allowed to compete with the higher classes or is a separate class held for them?—I am speaking of this Melrosapuram vocational school which is restricted entirely to depressed classes.

13599. I thought you said you had taken other classes also?—We would take them if they came, but the other classes would not come and live with these boys.

13600. You have no other class except the depressed class?—Not in the village vocational schools, but in the high school we have all classes.

13601. Are competitive examinations held in those high schools?—Yes; the boys go up for the School Final Leaving Certificate examination in agriculture, a public examination.

13602. Are any prizes awarded specially to the depressed classes, or do all compete together?—No; all compete together.

13603. *Professor Gangulee:* Would you call the type of middle school that you proposed vocational?—The type of middle school that I at present run?

13604. Yes?—Well, for want of a better name I call it vocational.

13605. Or would you call it pre-vocational?—I really do not know what distinction there is between the two. The word has been used again and again and nobody seems to be able clearly to define vocational training.

13606. My difficulty is this: can you teach agriculture at that stage?—I think so; you cannot teach agriculture as it is taught at Coimbatore at that stage, but as suited for children. If you can teach any other subject, such as Botany, to children at that age you can surely teach agriculture.

13607. For instance, would a boy of that age understand the composition of the soil?—When he goes to the high school he would.

13608. In your vocational middle school?—No, I do not think so at that stage. What he is taught there is that certain ingredients are required for plant life. He is told what the soil is deficient in and he is led to understand that certain manures help. He learns that in a general way, not scientifically.

13609. For the supply of teachers which is of course very important, you look to the Agricultural College, do you?—We have only one teacher who is trained in agriculture, the Superintendent who is responsible for the middle school; in the high school our teacher is a Coimbatore College man. In the middle school we have a man trained at Coimbatore.

13610. You say here that the Agricultural College should aim at turning out teachers. Is that for these schools that you propose?—Yes.

13611. What salary would you offer a teacher in an agricultural middle school?—He would be given probably the same salary as a graduate in Botany or in any other subject in the high school, who begins at about Rs. 80 and goes up to about Rs. 200.

13612. So that if you have agricultural middle schools of the type that you propose, you have to have a teacher whose salary would be about Rs. 80 a month?—No, not in the middle school. The teaching of agriculture in the middle school would be of a lower standard. I should say that a man who has been in the high school, who has taken the school leaving examination, taking agriculture as an optional subject, and then had a course of teacher training, would be fit to hold a post in the middle school. But for high school work we should want a graduate who has also been trained as a teacher.

13613. Do you make any distinction between the teacher in agriculture and a scientific agriculturist?—Yes. What I mean by a scientific agriculturist is the type of man that Coimbatore is turning out just now.

13614. You do not think that Coimbatore is turning out teachers?—To teach as a profession requires special training. If you are going to get one of these men to become a teacher in agriculture in the high school it would be necessary to train him in teaching methods.

13615. Can one describe your agricultural middle school at Melrosapuram as a community centre?—No, I do not think it has yet developed into that.

13616. What is the attitude of the village folk towards your school?—Well, the average village person does not approve of anything in the nature of manual labour; when you take a boy away from his village and take him to the school the idea is that he is ever after going to study books and that it is rather degrading for him to go back to his village and take any share in agricultural work. When I changed the Melrosapuram school some years ago from being a purely agricultural school to a vocational agricultural

school, I sent about 20 or 30 boys from a boarding school in Chingleput to this rural school. Out of those 20 or 30 not one arrived there; they refused to come to a place where they had to do agricultural work. So we had to close down the school, and for several months we had no school. Gradually they came back one by one and I told them they must go through this school if they were to go on to high school education.

13617. In this school of yours, do you have occasional meetings, lantern lectures, and so on?—Occasionally, yes.

13618. Do the villagers attend?—Yes.

13619. Other than the Christian community?—Once a year we have a great gathering there for two days.

13620. And the villagers attend?—Yes; the villagers attend; we have ploughing matches and agricultural demonstrations open to all the Christians in all the villages.

13621. Can you tell us why the rural schools are not being developed into community centres? Do you come in touch with schools other than your own, other elementary schools than those run by missionaries?—I have a little to do with municipal schools; I am a member of the Municipal Council in Chingleput; but they are of course in the municipal area.

13622. So you have had occasion to study these rural schools in different parts of the Presidency?—I cannot say I have studied it.

13623. I should like to know from you, as an experienced educationalist and social worker, why these rural schools are not being developed into community centres? What is lacking?—I am talking of the depressed classes. The average villager sends his boy to school with the idea that he should go out from the village and make a living by teaching or by some other means. He does not recognise the value of knowledge for its own sake, or as being anything that would be of use to him in the village itself.

13624. What are your views on the teaching of agriculture at Moga in the Punjab?—I have never been there; it seems to be very successful; it is a line on which our Mission has tried to work in training its teachers down here.

13625. Was your curriculum drawn up by the Mission or did you have some official expert advice?—In the middle school or the high school?

13626. In both?—In the high school the curriculum was prescribed by the Government for the Secondary School Leaving Certificate. For the middle school we used to follow the syllabus prescribed for the Government technical examinations in agriculture. A few years ago the agricultural examination was done away with in the technical examinations. We follow a syllabus of our own now.

13627. On page 402, you say that a knowledge of agriculture would be of value to all Government servants and specially to revenue officers. Do you have occasions to come in contact with revenue officers?—I meet them occasionally.

13628. You felt that if these officers had some training in agriculture they would be more useful to the people?—A great deal of their work consists of appraising of crops in the villages. They have got to deal with the ryot and his income from this and other sources. My idea of agriculture is that it is an educational subject in itself, quite apart from the fact whether a boy becomes an agriculturist in after-life or not. It is a help to the teaching of all the sciences; it includes a certain amount of botany, some science and some biology.

13629. We see that from your note. Has the Director of Agriculture visited these interesting experiments that you are carrying on in Chingleput and Melrosapuram?—I think he has.

13630. Have you ever invited Agricultural Demonstrators to entertain your boys by showing the agricultural work in the Presidency by lantern

slides?—Yes, but I have had much more help from the Industrial Department than from the Agricultural Department. They have recognised our schools; they give scholarships and help in the matter of finance. The agricultural officials inspect us occasionally, but have never done anything to help us in any way.

13631. *Mr. Calvert:* What standard are you aiming at in this vocational middle school? Are you teaching them up to what the father knows or a little more than that?—Beyond what the father knows because the father knows nothing. He is entirely illiterate.

13632. He has the practical empirical knowledge of agriculture?—Yes; we are aiming to give him something more than his father's knowledge.

13633. Do they get any better terms as cultivators or labourers than boys who have not had this teaching?—I do not think so.

13634. Under the system you describe, the share system, if these boys get better outturns the landlords will get a better share?—Yes.

13635. Does the landlord take any interest at all in your school?—A great many of the landlords are professional men. They live in Madras or distant places; they do not know anything about the land. As a matter of fact, I think I pointed out that in Chingleput some of the lawyers come to me and say, "we own lands away in our village; we go for our shares in the harvest time; we know absolutely nothing about agriculture; when our sons grow up and become lawyers they will go out occasionally and will be able to guide the cultivator and see that he is making the best of his land, because he will be trained vocationally."

13636. The fact that you are trying to train up a better class of cultivator does not apparently meet with any response from the landlords in any way?—No, I do not know in what way they could encourage them really. I think they are appreciating the education we are giving their sons in the high school.

13637. I was thinking of the middle school?—In the middle schools we are dealing with the depressed classes entirely.

13638. In a school like your middle school as there is no standard is there not always the danger that a bad teacher may teach worse agriculture?—I suppose there is the danger, but it is not a very great danger. Of course there is that risk if you teach any subject badly; you can teach bad science.

13639. Teaching bad science does not necessarily reduce your earnings, but teaching bad agriculture might?—Yes.

13640. Are the co-operative societies which you know personally self-managing?—Yes, they are all self-managing.

13641. Do you find that the spirit of self-help is really making headway?—I do not think so.

13642. As a result of the co-operative system in your neighbourhood has such a spirit of mutual help sprung up which would lead society A to offer help to society B if society B were in lack of funds?—I do not think so, unless it were done officially through the Government officers. They can pretty well order a society to do as they wish them to do.

13643. *The Chairman:* Do they ever interfere in the matter of giving credit to a particular person?—The officials?

13644. Yes; do they ever bring pressure to bear on the local committee?—I have never heard of it being done.

13645. *Mr. Calvert:* Is any attempt made in the societies within your experience to teach these people village economics?—No.

13646. The principle of economics as applied to village life?—No, I do not think so.

13647. Do your societies know that they own the central banks?—No, I think the individual member of the society regards the co-operative society

in the same light as he regards the moneylender as somebody to whom he can go to get a loan when he is having any special expense in connection with marriages and so on; their interest ends there.

13648. There has not been such a marked increase in the spirit of mutual trust and confidence as might lead them to agree to the consolidation of fragmented holdings?—I hardly think so.

13649. Adult education, I gather, has not been very encouraging. Has any serious persistent propaganda been carried on to encourage adult education?—I do not know of any.

13650. In adult schools the teacher has to attract the pupils to the school? —Yes.

13651. Whereas in regard to children's education the fathers send them to school?—Yes.

13652. Do the teachers really try to attract the adults to the schools?—I think some of them do occasionally.

13653. Adult education is almost more a matter of the personality of the teacher than is the education of children?—Very much so.

13654. You require a very much more sympathetic teacher?—Yes.

13655. For adult education have you not had special readers?—No. There was an attempt some years ago to bring out a simplified script. It was thought that the Tamil vernacular alphabet was rather difficult for the adult to pick up; but I do not think it has come to anything. A book has been published by the Christian Literature Society giving a special script which they say can be picked up in three weeks, so that a man can learn to read in 3 weeks.

13656. *The Chairman:* Do you believe that is possible?—I have not seen it worked out, or tried out.

13657. *Mr. Calvert:* When we started adult schools with the ordinary children's primers and the farmer started reading "a cow has four legs, two behind and two in front," his idea of the value of education slumped. Do you experience any difficulty like that?—No.

13658. *Mr. Kamat:* You told the Chairman just now that very few of your boys go back to the fields?—Yes.

13659. Do you know of any exceptional cases of boys trained in your schools going back to the fields and making a success of farming?—My experience has been limited to the last few years. I do not think many of our high school boys return to the land though I think a few of them do; but then we have only been working on agriculture in the high school for four years.

13660. So that in effect what your schools are now doing, apart from the civilising influence which of course I recognise, is that they are turning out teachers?—Yes, largely.

13661. So that these agricultural schools are in effect training schools for turning out teachers?—Yes, and teachers who when placed in a village will be interested in the agriculture of the village; that is our aim.

13662. But taking only an academic interest in it?—Hitherto our teachers had been purely academic men who teach the three R's in school and take no further interest in it; but if they had a training in agriculture in the high school or even at the vocational school they could go out among the parents, help them, advise them and discuss matters with them.

13663. Do you realise that the general effect of turning out teachers from such schools would be to create an impression among the parents that you are attempting to wean the son from the influence of the father?—Yes, that is because there are so few of these schools; we require the teachers at present; there is a tremendous demand for teachers at the present time

with the extension of education; we must set teachers and we naturally take boys who have been through our own school and are better qualified; but with the multiplication of these schools there will not be the same number of openings for the boys who go out from the teaching schools.

13664. You told us you taught spare time occupations to your boys?—Yes.

13665. Have you tried the experiment of teaching adults these crafts and small industries?—No, it would be very difficult to teach adults; it would mean putting teachers in all the village communities.

13666. So that rope-making and basket-making and such things which appeal to the boys are confined only to juveniles and are not taught to the adults?—Yes, but these boys will be the adults a few years hence.

13667. If these boys grow up they contribute their knowledge of these arts and turn them to practical purposes?—Some of them do.

13668. In what manner? Do you mean that in addition to being teachers they turn their knowledge of these arts to practical purposes and make additional money?—My point is this. In every school you get the boys shed off in every stage. In our vocational system we shall have a certain number of boys who go right through. Other boys will leave at an earlier stage and go back to their villages: parents take them away from school for some reason.

13669. Do they retain their knowledge of basket-making and rope-making and can they turn their arts to practical purpose by making additional money when they are grown up?—I think they can but they will not make a living out of these subsidiary village industries.

13670. So even there your teaching of these men is practical?—It will occupy their spare time and feed them probably during those months without drawing on their savings.

13671. Is there illicit distillation of liquor in the district to which you belong?—I do not know of any.

13672. You have no knowledge?—No knowledge.

13673. You have no reason to believe there is any?—No reason. One hears of places where toddy is drawn without the *chunam* being put into it.

13674. You hear of such things?—Occasionally.

13675. So that mere statistics showing that the drink habit is lessening or showing that illicit distillation has gone down would not be conclusive evidence that the drinking habit is diminishing?—Yes; but I do not think that illicit distillation is any more common now than it has been all these years. There is a palmyra tree; a man can take his pot and get the juice at any time if he knows he would not be caught.

13676. *The Chairman:* I do not know local conditions; but assuming you yourself do not engage in illicit distillation, would you know if there was any increase in that practice? Would it come to your notice?—I do not think so. I have no knowledge.

13677. *Mr. Kamat:* As regards emigration from your district to Burma and other places, are those people who emigrate from your place landless labourers or have they small patches of land?—They are usually landless, or almost landless. A certain number of the depressed classes have half an acre or a quarter of an acre; they are not altogether landless; they are just on the margin.

13678. They are just on the margin. Do they come back to agriculture when they return?—Sometimes they invest their money in cultivation; but once having got a taste of going to the hills they go away again and again.

13679. *Sir Ganga Ram:* It appears from the list that your district is very well situated, and has got 500 to 600 acres of land irrigated; is the irrigation from canals?—The irrigation is from tanks or reservoirs.

13680. Is your land very far from the reservoirs?—Not very far.

13681. Can you not pump water from the reservoirs?—We pump it up from wells; all our irrigation is done by wells.

13682. How much can a well command?—We have several wells; it depends upon the well. I have knowledge of pumping in one of our wells; our difficulty is that it exhausts the well after a run of a few hours.

13683. What is the power of the engine?—3½ Horse Power; it is the first time that an engine of that type has been used; it is experimental. Government have published one or two bulletins about it.

I will make an appointment with you to come and see it. I myself am running a 3½ Horse Power Petter Oil Engine; I will give you the best advice.

(The witness withdrew.)

Rev. W. S Sutherland.

Mr. M. T. SUBRAMANYA MUDALIYAR, Proprietor of Uttamapalayam, Madras.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(*a*) (*i*) Agricultural research is costly; moreover, for the benefit of all India, it should be administered and financed by the Government of India. Suitable centres should be selected for conducting various researches, having regard to climatic conditions required for the particular researches. Indians may be sent abroad to receive proper training; and when European experts are employed here, Indians should be trained under them, so that, in course of time, Indians may be able to conduct researches themselves. As far as possible, the selection of Indians may be regulated by the requirements of linguistic areas: *i.e.*, so many for the Tamil districts, so many for the Telugu districts and so on. In course of time, all publications relating to the researches should be in the vernaculars.

After success is attained in any branch, the result should be published in the vernaculars and the same demonstrated to cultivators by the expert or his assistants in important agricultural centres. This may be done at the expense of the Provincial Government.

(*ii*) The above observations apply more or less to Veterinary research also.

QUESTION 2.—AGRICULTURAL EDUCATION.—(*i*) The supply of teachers and institutions is not sufficient.

(*ii*) There is an urgent need for extension of teaching facilities in the districts of Tanjore, Trichinopoly, Madura and Ramnad known to me personally.

(*iii*) Teachers in rural areas should be drawn, as far as possible, from the agricultural classes.

(*iv*) To my knowledge there are no institutions outside Coimbatore to attract students from the agricultural classes; and in the College at Coimbatore students are generally from non-agricultural classes and most of them undergo training not for the purpose of improving any estate but only for securing appointments in Government service.

In elementary and middle schools agriculture should be included in the curriculam of studies and a small farm attached to each school; besides there should be demonstration farms in important centres in the district.

(*v*) At present boys go to the Coimbatore Agricultural College mainly to secure appointments in Government service.

(*vi*) In the Coimbatore College pupils are not mainly drawn from the agricultural classes.

(*vii*) Majority of students who have studied agriculture take to Government service.

(*viii*) Middle class youths from agricultural classes may be given scholarships, on their undertaking to serve as teachers in agricultural institutions or as managers of agricultural farms.

(*x*) Adult education in rural tracts may be popularised by means of demonstration farms.

(*xiii*) Of the institutions mentioned under (*iv*), elementary schools may be maintained or aided and administered by the Local Boards and middle schools and demonstration farms may be administered and financed by the Provincial Government.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) In the matter of application of manure, oil-cakes, fish manure and night-soil and the planting of single seedlings, I have demonstrated the advantages in my farms at Solavandan and Varichiyur in the Madura district; and now cultivators near

my farms are following my example and those near Madura are using night-soil freely for manuring their fields.

(b) Except my own field demonstration as stated above, I know of no other demonstration in my district of Madura.

(c) Cultivators may be induced to adopt expert advice chiefly by actual demonstration of the advantages of the improved system.

Besides establishing demonstration farms in important centres in the district, Government may also lend the services of a Demonstrator free to landholders who are prepared to make experiments or to start model farms in their own estates.

Government chemists should go round the country and after a personal inspection and analysis of soil and water, where necessary, advise cultivators as to the suitability of particular soil for particular crops, the application of suitable manures to soils for particular crops, the suitability of particular water for cultivation of tobacco or other crops, etc. Until the system becomes quite popular, no fee should be charged for such advice.

(d) In my Varichiyur farm, for some single crop lands, I used fertilisers for three years until last year, side by side with cattle manure, green manure, oil-cake, fish manure and night-soil. The experiment was a failure and I gave up the use of fertilisers in that farm this year. I, however, tried the experiment this year in some double crop lands in my farm at Solavandan and the first crop yield is satisfactory. I cannot give reasons for the failure of the experiment in Varichiyur farm or for the success of the experiment, so far, in Solavandan farm.

QUESTION 4.—ADMINISTRATION.—(a) All expenses connected with research work should be borne by the India Government and the expenses connected with demonstration and propaganda should be met out of a special grant by that Government to the Provincial Government, until the provincial contribution is done away with.

(b) *Vide* answer to 1. (a).

(c) (i) I am satisfied with the Agricultural Service, so far as the selection and distribution of seeds and manure and the encouragement of planting of single seedlings are concerned.

As regards Veterinary Services, the methods adopted for the prevention of the spreading of contagious diseases have been successful to a very limited extent; otherwise the services are not satisfactory. Further they are too costly even for well-to-do ryots.

(ii) *Steamers do not serve agriculturists to any appreciable extent. As regards the railways, the freight for carrying cattle-food including straw and manures (including green manures) should be reduced and waggons supplied promptly.

(iii) The village roads are inadequate and ill kept. Although ryots pay cess to Local Boards for the maintenance of roads, at a high rate, they are obliged to pay besides, heavy toll amounting to Rs. 5 for carting manure for one acre of land in the Madura district. No toll should be levied for carting manure by a ryot or even by a trader; as, in the latter case also, the toll, if levied, would fall ultimately on the ryot who purchases the manure.

QUESTION 5.—FINANCE.—(a) There should be an agricultural bank or a co-operative society, with a godown, for each village or group of villages of 500 or more houses. The bank or society should lend money to cultivators on easy terms, for the purchase of manure and seeds or the maintenance of the cultivators' family; and at the time of the harvest, it should receive a portion of the produce in kind, store it in the godown, sell it in a favourable season, and out of the sale-proceeds pay itself its dues, returning the balance, if any, to the cultivator.

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* In stations which export a large quantity of manure and fodder, the Government should supply a machine for pressing the manure and fodder and thus reducing the volume as far as practicable.

It should similarly lend money to cultivators for purchase of agricultural implements and cattle and recover the loan in instalments in the course of two or three years.

In the case of loans for improvement of land, sinking or repairing wells, or digging or repairing tanks, the term may be ten years.

(*b*) Cultivators may be induced to make fuller use of the Government system of *taccavi*, if the loans are granted by the Government through the village agricultural bank or co-operative society.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (*i*) The main causes of borrowing are:—

Poor yield of lands on account of ryot's inability to improve and manure his fields,

failure of crops on account of bad seasons,

loss of cattle by disease,

increase of cultivation expenses and increase in the cost of living, and want of employment during non-cultivation season.

(*ii*) Cultivators are generally unable to get loans on easy terms and they are obliged to borrow money of usurers on exorbitant terms—the rate of interest, especially where the loan is repayable in grains, being as high as 150 per cent. in the case of cultivators who have no tangible property.

(*iii*) In the case of cultivators without tangible property or petty ryots, their income is hardly sufficient for the maintenance of their families and they are unable to repay loans generally contracted in lean years. The very causes which compel them to go in for loans prevent them from repaying the loans.

(*b*) For wiping off the existing debts, loans should be granted by the Government through agricultural banks or co-operative societies, the same being repayable with a moderate rate of interest—not exceeding 6 per cent. in easy instalments, in the course of 30 years or so.

In the case of an agriculturist, the rate of interest on loans should not exceed 12 per cent. per annum and he should be exempt from arrest for civil debts.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—Prevention of fragmentation of holdings by legislature is impracticable.

QUESTION 8.—IRRIGATION.—(*a*) In my district of Madura, I advocate the adoption of the following schemes.

(1) Supplementing the Periyar Reservoir by damming, and forming a reservoir across the Pambaiyar and a Hydro-electric scheme at the Periyar lake.

(2) Widening the existing Periyar tunnel.

(3) Excavating a right side canal from above the Peranai Regulator for irrigating lands in Tirumangalam taluk.

(4) Cardamom Hills Reservoir Project with a combined Hydro-electric scheme at Kambam.

I have inspected the scenes of these projects and taken a personal interest in them.

The above projects when completed will bring under wet cultivation a large extent of lands in Tirumangalam taluk which contains a large Kallar population. This will give profitable employment to Kallars and largely help their reclamation which is now being attempted by the Government in other ways, but without appreciable success. I may here mention that in the Melur and Madura taluks, the Kallars, who were formerly as bad as the Kallars of Tirumangalam taluk, have now become respectable citizens after their lands were brought under wet cultivation under the Periyar scheme of 1895.

Improvements in the existing systems or methods of irrigation:—At present minor irrigation works are in a neglected condition, owing chiefly to the indifference and want of co-operation of ryots and the indifference of the

authorities who are bound to see the works properly carried out. Government should take steps and see that the ryots carry out their responsibilities and that the works are properly attended to. The defaulters should be made to pay for their neglect, by a legislative enactment, if necessary.

Even irrigation works under the control of the Department of Public Works are at present neglected to the great detriment of ryots.

Wells:—In places, where there are no other sources of irrigation, Government should give facilities to ryots for sinking wells, by grant of loans on favourable terms, and by loan of machinery, etc. Although this is done at present to some extent it is not on an adequate scale.

In the Tanjore district, the drainage under the Nandalar is very defective, as, in times of flood, the water of the river overflows the banks and innundates the fields on both sides of the river. The Cauvery Committee has recommended that the necessary improvement to the water-way of the river, wherever it is narrow, and the strengthening of banks should be carried out with as little delay as possible. This work is an urgent one and I would advocate action being taken without delay.

Question 10.—Fertilisers.—(a) Except cattle and sheep manure, all other animal manure, such as human excreta and urine, is now practically wasted. Municipalities and Unions should arrange for the collection of all such manure as is now wasted, and store it at some place away from the village and water sources, and subsequently sell it as field manure. This system would help not only agriculture but also sanitation.

Cultivation of crops for green manure may be encouraged by the supply of seeds at a cheap rate through village co-operative societies and also by demonstrations.

As natural manures available are quite inadequate, fertilisers will have to be used on a large scale, if every land is to be properly manured; but they are now very costly and therefore beyond the means of ordinary ryots. Some attempt should be made to bring down the price of fertilisers, as far as possible. Government itself may manufacture fertilisers or it should give facilities to co-operative societies to manufacture the same, so that fertilisers may be available even to ordinary ryots at a moderate cost.

The export of all manures including bones and oil-cakes should be prohibited. As oil-cakes, which contain some oil, are not good manure, Government should give facilities to co-operative societies to purchase a machine for extracting oil completely from oil-seeds or for recrushing oil-cakes and extracting the oil therefrom.

(e) Demonstration will popularise new and improved fertilisers.

(f) In villages, the practice of strangers picking up cowdung from fields for the purpose of using it as fuel, should be prohibited, as it causes considerable loss to the field by diminishing its yielding capacity. As it would be difficult to find out from whose field or fields the dung was removed especially where the village consists of small holdings, the removal of cowdung from any field, except by the owner and for agricultural purposes, should be made a penal offence.

People are now tempted to use cowdung as fuel, for want of other cheap fuel. To remove this temptation, fuel trees should be grown on Government lands and fuel supplied at a cheap rate to villagers.

Question 11.—Crops.—(a) (iii) The recent distribution of selected seeds by Government agricultural farms appears to be good; but there are not yet sufficient data for estimating the increase, if any, in the yield, on account of these seeds.

Question 14.—Implements.—(b) The advantages of the use of improved implements should be demonstrated to cultivators by experts and the implements supplied to them by the Government at moderate prices.

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QUESTION 15.—VETERINARY.—(*a*) The Civil Veterinary Department should also be under the Director of Agriculture.

(*b*) (*ii*) In the Madura district, the existing veterinary institutions do not serve any useful purpose and there is therefore no need for their expansion.

(*c*) (*i*) Agriculturists made little use of the veterinary dispensaries in the Madura district. The services are so costly that even well-to-do ryots avoid sending their cattle to veterinary dispensaries for treatment.

There is an indigenous cheap system of veterinary treatment, and it ought to be scientifically investigated and put on a workable basis, as it is more suited to a poor country like India, than the costly Western system. As far as possible, every big village should have a veterinary physician trained in the indigenous system, as it would not be practicable to send cattle to distant places for treatment.

(*ii*) I do not know of any touring dispensary in the Madura district.

(*d*) I would advocate legislation dealing with notification, segregation—but within the village itself—disposal of diseased carcases, compulsory inoculation of contacts and prohibition of the movement of animals exposed to infection—but all at the cost of the Government. Veterinary officers should, however, enforce this more by advice and other persuasive methods than by penalising ignorant ryots. The penalty for non-observance of the rules should be very light—say, a fine of one rupee or so, for each offence.

(*g*) I consider that provision of further facilities for research into animal disease is desirable.

(*i*) I would not recommend the appointment of a Superior Veterinary Officer with the Government of India.

QUESTION 16.—ANIMAL HUSBANDRY.—(*a*) (*i*) Bulls of superior breed should be allowed to serve as stud bulls and bulls of inferior breed castrated.

(*b*) (*i*) Common pastures are wholly inadequate and the poor condition of cattle is chiefly due to want of sufficient pasture lands in villages.

(*ii*) Betterment of the dairying industry is possible in places like Cantamanayakanur in the Madura district, where there are extensive pasture lands.

Good dairies are badly wanted especially for cities and towns. Government should give special facilities, by granting loans at concession rates of interest and otherwise, to individuals or societies who offer sufficient guarantee and undertake to start dairies and conduct them on proper lines.

(*c*) In the district of Madura, there is fodder shortage in the months of July and August and again in November and December, *i.e.*, one or two months before the first and second harvests. The scarcity of fodder exists for about eight weeks on each occasion, *i.e.*, for about 16 weeks in all in the year.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) The number of days of work done by an average cultivator on his holding during the year depends upon the nature of the holding:—

In the case of garden land practically throughout the year.

In the case of single crop wet land, 7 months.

In the case of double crop wet land, 9 months.

During the slack season cultivators who live near towns and hill plantations find cooly work, while others are practically without employment.

(*b*) Wherever it is possible a cultivator may sink wells in his dry lands and convert it into garden land, so that he may find occupation throughout the year and increase the yield of his holding. His women and children may engage themselves in spinning by *charka*.

(*c*) Such industries as beekeeping, poultry rearing, fruit-growing, etc., may become more popular if the advantages of the industries are demonstrated to cultivators and if they are given small advances for starting the industries.

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(d) Government should do more to establish the industries under this head and they should encourage individuals and societies to start such industries by manufacturing cheap small machines, which could be worked by manual labour and supplying them to villagers on easy terms.

(e) Yes. By encouraging industrial concerns to move to rural areas, congestion in towns may be relieved to some extent and the labourers may lead more healthy lives and further have a principal occupation as well as a subsidiary occupation, in villages. Agriculture will also be benefited by the increase in the number of labourers in the village, as they would be available for agricultural work in the busy season.

One method of encouraging industrial concerns to move to rural areas appears to be to limit the number of licences to industrial concerns in towns.

QUESTION 19.—FORESTS.—(b) The supply of firewood in rural areas may be increased by the growing of fuel trees on Government lands.

(c) Deterioration of forests has led to soil erosion. To reduce erosion and damage from floods, trees should be cut only after they become old and new trees planted in the place of old ones.

(e) There is no opening for schemes of afforestation in the neighbourhood of villages in the Madura district.

(f) Forests are not suffering deterioration from excessive grazing.

QUESTION 22.—CO-OPERATION.—(b) In the Madura district, there are some credit societies only and no other societies mentioned under this head. Such societies, however, are needed and the Government should give facilities to start them and they should also supervise and control them.

(c) Yes. I think legislation should be introduced for the purpose referred to under this head.

(d) I know that the credit society at Solavandan is doing good work by lending money to ryots for agricultural purposes.

QUESTION 23.—GENERAL EDUCATION.—(a) The existing systems of general education have not touched the agricultural efficiency of the people. Agriculture should be included in the curriculum of studies, at least as an optional subject, in all schools and colleges, wherever facilities exist for the attachment of a farm to the school or college.

(b) (i) As already indicated, rural education should include agriculture, at least as an optional subject.

QUESTION 24.—ATTRACTING CAPITAL.—(a) Agriculture, as it is at present, is not paying. Unless, by demonstration of new and improved methods, it is proved to be a profitable concern, men of capital and enterprise are not likely to take to agriculture.

(b) The factors tending to discourage owners of agricultural land from carrying out improvements are chiefly (i) want of funds (ii) the apprehension that improvements will also be taxed at the next revision of assessment.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(a) For improving hygiene in rural areas, lessons on hygiene and village sanitation should be given to boys and girls in schools and to adults in public places and during non-working hours. The lessons should be illustrated by demonstrations with the help of lenses and apparatus.

(b) Yes, Government may conduct economic surveys in typical villages and collect information on, *inter alia*, the following points:—

What is the condition of ryots who depend entirely on agriculture?

If it has deteriorated, what are the causes?

If the causes are avoidable, what steps should be taken to ameliorate the condition of the ryots?

Mr. M. T. Subramanya Mudaliyar.

Before concluding, I wish to make a suggestion as regards administration. Ryots are now put to considerable difficulty in having to seek relief in matters connected with agriculture from several departments, and in being referred from department to department. In all matters affecting agriculture, the District Collector should be the highest authority in the district and officers of other departments should act only in co-ordination with the Collector. Ryots should look only to the Collector for redress of their grievances. Although the Collector will have in several cases to act only in consultation with or to get things done by other departments, especially in matters requiring technical knowledge, the decision must rest with the Collector; and appeals against his decision will, of course, lie to the Revenue Board and finally to the Government.

Mr. M. T. Subramanya Mudaliyar.

Oral Evidence.

13684. *The Chairman:* Mr. Subramanya Mudaliyar, you are a member of the Committee which made certain preliminary preparations for the provincial evidence?—Yes.

13685. We are greatly obliged to you for your share of that and also for your written evidence which is very clear. You have directed your attention to those points which interest you, and I have only one or two questions to ask you. But before I ask you those questions, would you like to make a statement of a general character?—As soon as your questions are over, I shall make a general statement.

13686. I see you are quite clear in your mind that the Government of India ought to pay for research. Do you think the Government of India ought to pay for all agricultural research?—Yes.

13687. And you think that the Government of India ought to have complete charge of all research institutions?—Yes.

13688. In cases where research institutions are being carried on in conjunction with teaching of agricultural subjects, how would you divide the responsibility between the Provincial Government and the Government of India?—I say as far as research is concerned, the Government of India ought to pay.

13689. Where research is combined with education?—Education is a Provincial Subject, and therefore the Provincial Government will have to make a contribution.

13690. On page 425 of your note you are talking about village roads in relation to the local taxes paid by ryots to the Local Boards. In your wide experience have the roads in the charge of Local Boards deteriorated recently in this Presidency?—Yes, because the funds are not sufficient to maintain them.

13691. The local authority is not in funds?—They are increasing the number of roads, and the funds are not sufficient to maintain them.

13692. I rather gather from your evidence that your contribution towards the difficulty is to still further reduce the fund. Do the Local Boards enjoy any part of the toll?—Yes.

13693. They do enjoy the toll. Have you any suggestions to give more funds to the Local Boards?—Yes. As far as the ryot is concerned the roads are more important to him.

13694. Than anything else?—Except agricultural demonstration. The road is very important to get manures and to export the produce.

13695. Would you devote provincial funds to the upkeep of the roads at present in charge of Local Boards?—Yes.

13696. On page 426, you put forward certain suggestions designed to extend irrigation facilities in your own district. Would you tell the Commission whether these are your own personal ideas or whether you have the authority of any engineer. Perhaps you are an engineer yourself?—No. I have personally seen these projects; they are very near Madura.

13697. Have you worked out the cost of these projects at all?—No; I am not an expert at all. In this connection I would like to state that the most important projects will be the Tungabhadra and Kistna projects. For the last 150 years these areas have been suffering from famine. Those projects will cost 30 crores, and they will irrigate 2 million acres and benefit those tracts which are known as famine tracts.

13698. Those schemes, if adopted, would make a contribution towards the solution of the famine problem in those districts?—Yes.

13699. *Sir Henry Lawrence:* How many crores would they cost?—I have got the opinion of an expert engineer; he says they will cost 30 crores, and will irrigate 2 million acres.

13700. *The Chairman:* Sir Ganga Ram will ask questions about them. On page 428, under the heading Veterinary, why is it that you desire that the

Civil Veterinary Department should be placed under the Director of Agriculture?—Because veterinary aid is connected with agriculture.

13701. Can you point to any concrete example of the disadvantages following from the present arrangement?—I cannot see any disadvantage, but the expense of running the departments will be less.

13702. You say on page 429, "Agriculture, as it is at present, is not paying." What type of agriculture are you referring to there?—I think wet cultivation, dry cultivation, all those things.

13703. All forms of cultivation?—Yes.

13704. Is it your view that agriculture is economically worse now than it was when you first knew it?—Yes. There were more facilities then for manuring; the soil was more fertile. Soil fertility has now gone down because they are carrying on cultivation without an adequate supply of manure. The ryot is not able to manure because there is scarcity of manure owing to shortage of cattle; there is not enough farm yard manure, and that is the only manure which the people can use without difficulty.

13705. How long have you known the district with which you are most familiar?—For the last 33 years.

13706. Are you quite sure that the yield per acre has gone down in these 33 years?—Yes.

13707. How much?—I think the best yield per acre 20 years ago was nearly 20 *kalams;* 72 measures make one *kalam.*

13708. *Sir Ganga Ram :* Yield of paddy?—Yes.

13709. How much in tons or maunds?—I think one Madras measure is said to be 2½ lbs. But actual weight is 2¾ lbs. 72 measures will therefore be nearly 200 lbs. or 2½ maunds.

13710. *The Chairman :* Twenty *kalams* is one crop?—Yes, the first crop.

13711. That was twenty years ago; what would be the yield now?—It is only ten *kalams.*

13712. Gone down by 50 per cent.?—Yes. They are not able to manure their fields, there was enough of cattle manure in those days.

13713. Is it typical of the whole area to which you refer, or is it just an instance from one field?—Not typical. I think very near the forests, where they used to get enough of cattle manure before, they are not able to get enough now. Near the towns they are able to collect town rubbish and manure their fields; also lands near villages get some manure. In other parts the yield is poorer now.

13714. You think the average yield per acre throughout the Presidency has gone down 50 per cent.?—At any rate, as regards the Periyar area in my district.

13715. *The Raja of Parlakimedi:* On page 425, you say that you have tried some of these manures and they have proved a failure in comparison with cowdung manure?—I have tried them side by side with cowdung. I have taken 50 cents of land for each manure. I think the fertiliser gives the poorest yield. Night-soil comes first; then comes cowdung; green manure, oil-cakes, and fertilisers in order of merit.

13716. Have you followed the departmental advice as to how these manures should be applied to each crop and so on, or do you have your own method?—It is my own method.

13717. Of course, to get effective results, you must mix these manures with different other things?—I did not mix; I applied each manure separately; I wanted to know which would be the best, and my results are these.

13718. Was the soil of the same standard?—All the land is in the same village, and the fields are near to each other; it will be the same.

13719. Did it get all the facilities of irrigation equally?—It was the same irrigation for all the fields in the village where I have nearly 50 acres.

13720. You know sometimes the fields lie in different levels?—Not very different.

13721. Did you examine it thoroughly to prove that these manures were ineffective in comparison with farm-yard manure; did you actually watch the experiments sufficiently closely to justify you in making such a statement?—The cultivation was carried out by a servant, but I used to examine it myself often.

13722. For green manure what plant do you actually use?—I made use of *kolinji*.

13723. It has been suggested that there are other plants which have a better effect, for instance, *daincha*?—I used to apply *daincha*, but not for these particular experiments.

13724. On what crop did you try those experiments?—On paddy.

13725. For paddy *daincha* is very suitable if you mix it with bonemeal. You say that night-soil has a very good effect?—Yes; it is the cheapest manure of all. In my experiments I applied manure worth Rs. 20 per acre; the value was the same for all the manures; that was the system on which I tested it.

13726. Price depends on the locality also, does it not?—Yes.

13727. You cannot make a general statement that this manure is cheaper and that manure is not, and so on?—That is the only way I could think of the value. Suppose you have an unlimited quantity, it will give more yield up to a point but from an economic point of view the money standard alone is the test.

13728. Of course, you say that according to situations the values of things vary?—Yes.

13729. Was this night-soil applied to any particular crop or soil?—It was applied in all the experiments as far as paddy was concerned.

13730. *Professor Gangulee :* Do you farm yourself?—Yes.

13731. How many acres?—I have my own method of cultivation. Nearly 60 acres.

13732. What do you mean by your own method?—It is the ordinary method of cultivation by the village people.

13733. Have you any other extraordinary method?—This year I have experimented in another farm at Solavandan with the aid of the Demonstrator, the agricultural expert, and side by side I have tried my own method of cultivation. One is the ordinary village cultivation, and the other is under expert advice; it is only this year that I have tried it.

13734. You have a large number of farm labourers, I suppose?—Yes.

13735. Do you pay them cash wages?—That depends; sometimes we pay cash, sometimes we pay probably by yield, and sometimes we pay in kind.

13736. How many farm labourers do you employ?—I employ about 10 men.

13737. You are familiar with the rural conditions of your district, are you not?—Yes, I know a little about it.

13738. Do you go about?—Yes.

13739. You make a statement that the results of the experiments should be published in the vernacular; do you think that such publication would in any way benefit the illiterate cultivator?—I think, if you publish them, the literate cultivator may be able to explain them to the illiterate.

13740. You felt the necessity that some of the results of the experiments in Coimbatore or in any other experimental station ought to be published in the vernacular?—Yes.

13741. Did you translate any of these publications into the vernacular? Did you do it yourself?—I did not regularly translate it; I used to explain all about it to my agricultural agents and the farmers who are there.

13742. You requested them to follow the improved methods?—I explained it to them.

13743. You did not do the translation yourself?—I did not translate the leaflets, but I used to talk to them about it.

13744. With regard to the Veterinary Services, you say that the methods adopted for the prevention of the spreading of contagious diseases have been successful to a very limited extent?—Yes.

13745. Have you any data to substantiate this statement? Which contagious disease have you particularly in mind when you say that they have been successful to a very limited extent?—Rinderpest.

13746. Then you think that the department is not successful in controlling that particular disease?—Not controlling; it is not able to help wherever there is an attack of this disease.

13747. Did you bring that to the notice of the department?—No.

13748. Further on you say that they are too costly?—Yes.

13749. What do you actually mean by that?—In Madura town there is only one veterinary dispensary and then in the district there is only one dispensary. Suppose a bull is attacked by any disease, it is not possible for it to be taken to a distance of 10 or 12 miles and to keep it there. If the man were to remain there, it would cost him daily 8 annas, and if the man had to stay there for 10 days it would cost the owner of the bull Rs. 5.

13750. The cost to the cultivator is Rs. 5?—Yes, because he will have to send a man with the animal, and the man will have to remain in the town and the cultivator will have to pay for his expenses.

13751. You say it is too costly even when no charge is made by the Department?—Even if there is no charge, it is not possible for the ryot to keep his cattle in the Veterinary hospital.

13752. No charges have to be paid for the treatment?—Recently they have abolished the charges, but before that there used to be a charge.

13753. Are you a member of any co-operative society?—I am not.

13754. *Mr. Calvert:* Has the value of agricultural land declined or increased in the last 20 years?—The value of the land has increased.

13755. Has it increased very largely?—Not very largely.

13756. This reduction of outturn is not so very serious; it has no effect on the price of the land?—No, but now the value of paddy is higher, and, therefore, although the return from the land is poorer, the value of the land is higher.

The Commission then adjourned till 10 a.m. on Monday, the 22nd November 1926.

Monday, November 22nd, 1926.

MADRAS.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.
Sir JAMES MACKENNA, KT., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E, I.C.S.
Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU.
Rao Bahadur B. MUNISWAMI NAYUDU GARU. } (*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH. } (*Joint Secretaries.*)

Mr. M. T. SUBRAMANYA MUDALIYAR.

Further Oral Evidence.

13757. *Mr. Calvert:* In your written evidence, you recommend that Government should advance money to help in the repayment of rural debt. Have you ever made any estimate of the total of rural debt?—I have not.

13758. Have you any idea of what sum you would recommend Government to advance?—All possible amount that the Government can spare must be lent. I have not taken any statistics as to what is the debt of a whole village or any district.

13759. You would probably find about 70 crores is quite a safe guess for the rural debt of the Madras Presidency. What amount do you recommend the Madras Government to advance?—I have not calculated that. But I know almost all the villages and especially the small holders are in debt.

13760. On the question of co-operative societies, you say that Government should grant facilities?—Yes.

13761. Have you any suggestions to make as to the kind of facilities?—Especially as far as the audit is concerned and probably advising the villagers to join the co-operative societies and showing them the advantage of it.

13762. Would you recommend that Government should pay for, say, a staff to educate the people in co-operative principles?—Yes, educate, because now the audit of the societies is not facilitated.

13763. The audit now is non-official?—Yes. I say that because there will be a sort of control if the audit is done by Government paid officials. If it is non-official, it is only done through love of duty.

13764. You recommend that Government should pay for the audit?—Yes.

13765. And also for a staff to educate the people?—Yes, and the advantage of it.

13766. *Sir Henry Lawrence:* Can you give me any idea of the ordinary rental that landlords obtain from paddy lands in your district, the rental that they receive from their tenants? That is, non-cultivating ryots?—There are two kinds of lands, double crop and single crop lands. In single crop lands the income will be only 5 to 6 *kalams*.

13767. What is the money value of that?—Rs. 45 to Rs. 70 an acre according to the market price.

13768. That is on the total crop of the land?—It is on the single crop land. On double crop lands, it will be 10 *kalams* or Rs. 90 to Rs. 120.

13769. That is the net income that the landlord receives?—Yes, net income.

13770. Does he pay the assessment?—Yes, he will have to pay the assessment, and for the land improvement.

13771. And does he pay any of the cost of cultivation?—No.

13772. All that is on the tenant?—Yes, all that is on the tenant.

13773. It is Rs. 45 to Rs. 70 in a single crop land?—Yes.

13774. *Sir Ganga Ram:* Irrigated land?—Protected by a perennial river.

13775. *Sir Henry Lawrence:* Who pays the water rate?—The landlord, not the cultivator.

13776. The landlord out of that Rs. 50 or Rs. 70 pays the assessment and what else?—Water rates.

13777. And what would approximately be the average land assessment and the average water rate?—I think that depends upon the locality. In certain places, the water rates range from Rs. 5 to Rs. 20; then they will have to pay a cess of nearly 1¼ annas in every rupee.

13778. That is for the Local Board?—Yes.

13779. And the land assessment?—It goes to the Government.

13780. How much is the land assessment?—Re. 1 per acre.

13781. Is that on garden cultivation?—If it be in the dry land, there is only dry tax which is Re. 1. There would not be any water rate for crops cultivated on dry fields.

13782. No water rate?—Wells, in the dry fields irrigate the lands. They are not irrigated by any channels.

13783. Are there no garden lands which take water from a canal?—Their number is very small; I do not think there is a single instance in my district where garden land is cultivated by canal water.

13784. *Sir Ganga Ram:* You are not a lawyer?—No.

13785. You are living on the produce of your land?—Yes.

13786. How much land have you got?—Nearly 700 acres.

13787. All irrigated?—Nearly 600 acres are irrigated.

13788. How much of it is in the delta?—Almost all my lands are in the delta.

13789. From whom did you receive the inspiration of these projects? Is it your own idea?—Yes, because I live near them.

13790. Has any engineer given you these figures?—As far as Tungabadhra and other things are concerned, the engineers have given figures.

13791. Can you give me, with regard to these five projects, some idea as to their cost and the area they will irrigate?—I have no idea of that. I have an idea of the Tungabadhra and Kistna projects which cost about 30 crores of rupees and which can irrigate nearly 2 million acres.

13792. Which number is it?—I have not mentioned it here. I have referred to them in my oral evidence.

13793. How much do you say?—2 million acres can be irrigated by the Tungabadhra and Kistna projects taken together.

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13794. What will be their cost?—30 crores.

13795. 2 million acres for 30 crores? What is your idea of productive and protective works? How much do you expect on a productive work, 6 per cent?—I think if it is 6 per cent for the Government, it is a very favourable rate.

13796. If Government should get 6 per cent after deducting working expenses?—Yes.

13797. How much do you think a zamindar or a landholder can pay at the very most?—That depends upon the locality and the soil, I think.

13798. When you say 30 crores at 6 per cent the interest will be 1 crore and 80 lakhs or nearly 2 crores; 2 crores divided by 2 millions will be nearly Rs. 10. You think people will pay Rs. 10 on the average? Then of course you must add also 25 per cent working expenses?—I have no idea of those places.

13799. I only ask your general opinion. I ask you whether landholders can pay Rs. 12-8 per acre? How much can they pay?—As far as my district is concerned, I think the people will be able to pay even Rs. 15.

13800. For water-rate?—Yes. They pay Re. 1 for dry land.

13801. Now they will be called upon to pay Rs. 14 for water rate and land settlement and everything else extra?—There are only two classes of land; one is dry and the other is wet. If it be settlement land there would not be a separate water tax.

13802. Altogether how much will be the burden on the land?—In my district they will be called upon to pay Rs. 15 per acre for double crop land.

13803. And this project which you are talking of will irrigate 2 million acres of that land?—Not that project. It is quite different. I have no idea of the Tungabadhra and Kistna projects or what the ryots there actually will be called on to pay.

13804. Unless Government is assured that it will pay, how can you expect them to spend 30 crores?—But these districts are often affected by famine. During the last 150 years famine has affected those districts very often and if Government take at that rate and keep only that consideration in view it will be an enormous benefit as far as human beings and cattle are concerned. So whether it is profitable or not, the ryots there will be in a better condition. Even if Government do not have any profit I think it is the sacred duty of the Government to protect against famine; and on that ground alone Government will have to take up these projects. In all these districts, Bellary, Cuddapah, Kistna and other places, there is famine; there are statistics and Government can learn. It is the most sacred duty of Government to protect from famine and anyhow the Government will have to undertake such a project.

13805. When did you have the last famine?—Even two years ago there was a famine in those places.

13806. What was the mortality in that famine?—I cannot say.

13807. Can you reduce all these ideas into figures? That is to say, how much should Government forego on account of famine, how much is due to human beings, how much to cattle and so on?—No; I cannot.

13808. Then we cannot arrive at how much Government is going to lose in recommending any project of that kind?—I think Government can appoint a special Statistical Committee and find out; I am ignorant of that.

13809. What is your notion of Government? In your evidence, in many places, you say Government should do this, Government should do that. Have Government any resources which they can place at your disposal for these losses? Now that the Reforms have put all the revenue and everything else at the disposal of the Provincial Governments, from what sources can they bear these losses?—Government can find the money if they want to. I do not ask anything to be given as a present. It is only as a loan that I want it. Government can recover it.

Sir Ganga Ram: But they must pay interest on the loans.

13810. *Sir Thomas Middleton:* On page 424 of your memorandum you have told us that you have been conducting experiments in two of your own farms?—Yes.

13811. When you started making these experiments did you consult the Agricultural Department, or did you arrange the experiments yourself?—I myself have undergone a course in the year 1895 in the Agricultural College at Saidapet. I have a little knowledge, and with that knowledge I tried these experiments for 9 years in my farm.

13812. You have been making use of the information you gained at Saidapet and conducting experiments in your own land?—Yes.

13813. You refer to using fertilisers in conjunction with cattle manure; I suppose you mean artificial manures?—Yes.

13814. What were they? Do you remember? I only want to know whether you were trying superphosphates or potash manures?—Superphosphates.

13815. Something which was new in your district?—Yes.

13816. You told us it failed and you could not give an explanation. At that stage did you go to the Agricultural Department and ask them whether they could explain it?—I did not ask them.

13817. Do you not think it would be advisable to consult them when you find you are in difficulty?—I have two farms. In a different farm at Solavandan, I am conducting another experiment under the guidance of an expert.

13818. There you are finding it successful?—I harvested there only a month ago; there is more to be harvested, therefore, I cannot say whether it is successful or not.

13819. It is known to you that in your district you require phosphates?—It is impossible to have natural manure; the cultivation has increased and there is a diminution of the sources of animal and green manure; therefore it is not possible to enrich the soil except by artificial manure.

13820. You say it is impossible; is it as the result of your own experience you have come to that conclusion, or is it as a result of what you learnt when you were at Saidapet?—It is the result not only of what I learnt at Saidapet, but of my experience in my village and other villages in the district. There is not enough of cattle manure. The only possible solution is to have artificial manure; without it it is not possible to enrich the soil; and without manure we cannot carry on intensive cultivation.

13821. And you yourself intend to continue those experiments until you are successful?—Yes.

13822. You suggest there ought to be some prohibition or some export duty on the export of oil cakes. Why do you make that suggestion?—Because in India we do not have facilities to get artificial manure; such being the case to export all available manure to outside countries is a great loss to the country.

13823. What particular class of land wants that oil-cake manure; are you thinking of paddy land?—Oil-cake and bonemeal can be used for all crops.

13824. Were you not thinking of your paddy cultivation?—No, but it is better for paddy cultivation.

13825. Assuming that were done, what would happen to the people who grow oil-seeds?—I also suggest that machines should be introduced to extract all the oil. In the absence of proper machinery, there is a wastage of 3 or 4 per cent of oil; they will get value for that oil. I want to extract all the oil in India and use the oil-cake.

13826. I can see that; but do you not think that the profits from the growing of oil-seeds will be reduced if you adopt that policy of prohibition of exports?—We have to find manure for the soil, and by these steps I propose to do it. Unless we manure the soil it will be exhausted, and you cannot get any income. Even if you lose a little by not exporting manures to outside countries, in the long run by keeping this manure in the country there will be intensive cultivation and by intensive cultivation the ryot will be profited.

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13827. What you suggest is this; the ryots who use the oil-cakes (in your case the growers of paddy) will gain a little; but who will pay for the loss to the growers of ground-nut?—If there be proper machinery to crush the oil-seeds properly, the people who grow the oil-seeds will not be losers as they would then get a proper price for their seeds which will give 3 or 4 per cent more of oil; also the oil-cake will be used in the country for manure.

13828. And you are quite satisfied that the paddy growers would have a profit, and the ground-nut growers would have no loss?—There will be no loss; they will be gainers; they can get a price for their manure. Of course to a little extent they may lose. But when it is not possible to supply natural manure, we will have to obtain manures; oil-cake is one of them, and to keep the cake in the country we must have some restriction on export.

13829. *Dr. Hyder:* To take the last point; which policy would you favour, absolute prohibition or a tax on the export of oil-cakes?—I think in the case of bonemeal there should be absolute prohibition; but in the case of oil-seeds, until we find out a machinery to extract all the oil, there should be a duty only and not total prohibition.

13830. *Sir Ganga Ram:* What machinery?—Machinery to crush the oil-seeds.

13831. *Dr. Hyder:* Take the question of the export of bones. Do you think that if we absolutely prohibit the export of bones the ryots will reduce the bones into bonemeal?—Yes, because the cost will be cheaper.

13832. You do not think the bones will be rotting in the fields?—I do not think so; bone is an essential manure and people know it.

13833. You think the ryots will produce it?—Yes.

13834. *Dewan Bahadur Raghavayya:* You say that the village roads are inadequate and ill-kept, and you say that the ryots pay a cess to the Local Board for the maintenance of these roads. You are aware, I believe, that this cess is earmarked for the maintenance and construction of these roads?—Is all the cess paid by the ryots earmarked?

13835. The road cess is?—I do not think so, because they have to subscribe to sanitation and hospitals from this cess.

13836. Not from the road cess?—Then, I am wrong.

13837. Have you been on any Local Board?—I am not now on any Local Board; I was on the District Board twenty years ago.

13838. Has any systematic attempt been made by your District Board to raise revenue from avenues to increase the yield from avenues?—Yes; they are trying.

13839. Are they systematically planting fruit-yielding avenue trees?—No: they are planting shade trees.

13840. Shade trees the revenue from which is not very much?—Yes.

13841. Did you think of planting fruit-yielding trees, like the coconut or tamarind, to increase the revenue from avenues to a material extent?—To grow coconut trees there must be enough of water, and therefore it is only possible in deltaic or irrigated tracts; of course it would be more profitable. As regards tamarind, it will take a long time to grow, I do not have any idea as to what the cost of growing it will be and what will be the income. If we plant coconut trees in deltaic tracts it will be more profitable.

13842. Where the roads pass through deltaic tracts, if advantage is taken of the water to plant coconut trees on the roadside, it will be profitable?—It will be very profitable.

13843. That is not taken advantage of to the fullest extent now?—There are some trees at present; to a certain extent it is taken advantage of.

13844. You think such plantation should be increased?—Yes; I think it will be profitable.

13845. You said that the least amount from wet land for a single crop was Rs. 45 to Rs. 70?—Rs. 45 is for single crop; for double crop Rs. 90 to Rs. 120.

13846. You refer to crops in the delta of the Periyar?—Yes; that is my experience.

13847. What will be the yield in wet lands of the upland taluks where lands are irrigated from precarious sources?—From precarious sources it will be very low.

13848. How much?—If the season is favourable it will be even more than in perennially irrigated tracts; if the season is not favourable it will not be more than Rs. 20. If the season is unfavourable cultivation fails and all the available manure is preserved for the favourable season, with the result that in the favourable season the yield is very good. On the average it will be less.

13849. What will be the average?—It will be from Rs. 20 to Rs. 30 per acre.

13850. That is on lands outside the deltaic tracts?—On lands not irrigated by the perennial sources, *i.e.*, where there is only a supply for three or four months.

13851. You said that the land assessment on wet land was Re. 1 per acre?—Not on wet land, but on dry land.

13852. The average assessment on dry land is Re. 1. What is the assessment on wet land where the assessment is a consolidated one?—It is Rs. 15 including the water rate.

13853. If you want to take water to land which is not entitled to water, what is the water rate?—It is Rs. 16 now.

13854. For how many crops?—For two crops. When they take water, in some places they will have to pay even more; but Rs. 16 is the lowest; I am speaking about the Periyar area.

13855. Is it not Rs. 6 for the first crop and Rs. 3 for the second crop?—Rs. 6 for the first crop and Rs. 3 for the second crop is the rate on permanently-settled wet lands. The tax ranges according to the soil. In permanently-settled tracts they have a consolidated amount, from Rs. 6 to Rs. 13. In some places Rs. 19. There it is not possible to divide, because under a permanent settlement there is no separate water rate; they include all the rates in one.

13856. But for the water rate alone, if Periyar water is taken to dry land, you will have to pay Rs. 16?—Yes, for double crop.

13857. If Periyar water is taken to zamindari land, what is the water rate that is paid?—Only Rs. 5 for single crop and Rs. 8 for double crop.

13858. You say the ryots would be willing to pay a higher rate than Rs. 5 and Rs. 8?—Yes.

13859. I suppose you are aware of the fact that under the Cauvery-Mettur project, the ryots have agreed generally to pay a water rate of Rs. 15 an acre?—Yes.

13860. You say on page 427 of your note that night-soil and urine, which are now wasted should be collected. Do you think in the villages the people would favour such a scheme?—They can be made to do it only by education. My important point is that there are two matters concerned here; one is that the collection of night-soil and urine will be a source of manure, and the other is that it will preserve the sanitation of the village. I have seen that in villages where the people are not careful enough to remove this filth, they get all sorts of diseases; preserving sanitation of the place and getting a source of manure are the important points.

13861. In your district, the District Board has allotted a sum of about Rs. 30,000 for building latrines in villages and for collecting night-soil and urine; that is what I read. Do you know if the experiment has actually been started?—I think that in the present condition of the latrines in the villages, it is impossible for any decent people to make use of them; unless they are cleaned more often they are not in a fit condition to be used; so the people go to the topes and the river banks.

13862. Has the experiment been actually tried in any place?—In every union village there is a latrine, but it is not used properly.

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13863. That is with regard to union villages; what about non-union villages?—I have not seen it there.

13864. You say on page 428 of the note that common pastures are wholly inadequate; is it your experience that these common pastures yield good grazing?—Not now; unless they are improved it is not possible.

13865. Are they conserved anywhere in your own district?—No.

13866. Do you grow fodder crops in your district or on your lands?—My lands are mostly wet lands, and there is no necessity of growing fodder crops because I have enough of straw but in places where it is garden land and dry land, people grow *cholam* as a fodder.

13867. Is that a much better cattle food than grass obtained from common pastures?—Yes, *cholam* fodder is very good.

13868. You refer to famine; I suppose you mean scarcity of rain and consequent poor crops?—Yes.

13869. Actually, no relief works were started within recent years?—No.

13870. You mean failure of rain and the consequent poor yield of crops; is that what you mean?—That is for non-productive areas.

13871. In the non-productive areas?—Yes.

13872. *Sir Ganga Ram:* About bones, you say that the people will use them but bones are of no use to the field, unless they are crushed down to the fineness of bone-meal?—Yes; there are industrial concerns in Southern India where they prepare it by machines.

13873. That is what you mean; they cannot use bones as they are?—No.

13874. Do you give oil-cakes to cattle for food?—Yes, we do.

13875. Which oil-cake do you give?—We give the oil-cake pressed in the ordinary country mills, not that which is pressed in the press. If it is oil-cake made in the press, it is not possible to use it as cattle food.

13876. In the country mills there is a lot of oil left in the cake?—Yes; in the press, they use gunny bags to press the oil, the gunny bag threads get mixed up with the cake, and it is not possible to use it as cattle food.

13877. What is the yield per acre of ground-nut; what is the money value of it?—I think, with a good yield, it will be Rs. 50 to Rs. 70 per acre.

13878. Have you not got a fluctuating water rate? Supposing the land does not grow anything owing to some misfortune or through any other cause, do you mean to say that the combined rate of Rs. 15 will be charged?—I think there is a remission, but it is only nominal; it does not actually benefit the ryot; the rule is very strict; the remission is only on paper, it is nominal.

13879. It does not fluctuate; water rate is always charged on our side on the actual area grown, but here you say it is a combined rate, it is one fixed rate?—Is the settlement rate a fixed rate?

13880. That includes the water rate?—Yes.

13881. Whether any crops are grown or not?—Suppose there are 2 crops, the first crop and the second crop, Government consolidate the rate for the two crops and the ryots will have to pay it even if there is a failure, they are bound to pay that tax.

13882. Bound to pay? I can understand they are bound to pay the land rate?—They are bound to pay even the water rate.

13883. Even the water rate?—Whether they do or do not grow anything, they are bound to pay the settlement land tax. Every 30 years there is a settlement, and if the land is settled as wet land, they will have to pay.

13884. A charge of Rs. 15?—Rs. 15 or according to the rates.

13885. *Professor Gangulee:* As you are a practical farmer, I want to ask you one or two practical questions. Can you give us an idea of the cost of paddy cultivation per acre?—If it is properly manured, they will have to use manure worth Rs. 20 for one crop.

13886. I am not talking about the manure; what is the consolidated cost of paddy cultivation per acre?—Rs. 70.

13887. And the total yield per acre?—The total yield including the tenant's and the ryot's share?

13888. Yes, the total yield, how many Madras measures will it be?—It will be from 10 *kalams* to 15 *kalams* of 72 measures each.

13889. You depend chiefly on the income derived from your ryots?—Yes.

13890. And you are a ryotwari landholder?—Yes.

13891. I suppose the arrangement with your tenant is based on a crop share system?—Yes, in some places.

13892. What is your arrangement?—In some places I get a fixed rent, and in some places I get a crop share.

13893. What is your crop share?—In some cases, it is two-thirds, in others it is half.

13894. Two-thirds of the gross produce?—Yes, of the gross produce, and in some cases 50 per cent goes to the tenant and I get 50 per cent.

13895. Do I understand that the cost of cultivation, except the water rate, is deducted from the tenant's share?—Yes.

13896. Under this crop share system, of course, it is to the interest both of the tenant and of the landholder that the production per acre should be increased?—Yes.

13897. Suppose a tenant does not give you satisfaction, are you able to eject him?—Yes, I can eject him at my will.

13898. Supposing he has improved the fertility of the land, you say you can eject him at your will?—Yes.

13899. Do you give him any compensation for the improvement that he has made in the land?—If he gets more yield, he will not leave the land; he will keep it to himself.

13900. But supposing you are not getting on well with him?—I can eject him, but if he is a good tenant, I will not do it.

13901. But you can eject him?—Yes.

13902. Without giving him any compensation for the improvements?—Yes.

13903. Or, suppose that the tenant finds you exacting in your demands, is he free to leave you?—Yes.

13904. You advance money?—Yes.

13905. How is the loan realised?—I will take it from him as soon as the harvest is over; if he is able to sell the grain at the market rate he will do so and return the money to me, or he will give me grain to the value of the amount, according to the price of the market.

13906. When the harvest time is over, you get two-thirds of the crop, and out of the one-third, you take the cost of cultivation, and from what little is left you hope to get back your loan; is that the position?—Yes.

13907. In the event of loss of plough cattle, who replaces the loss?—Everything is his.

13908. You do not replace his loss?—No, unless I replace it in a philanthropic spirit; there is no condition.

13909. The cost of manure comes from him?—Yes.

13910. And the cost of bonemeal?—He has to pay the cost of everything; whatever improvement he does will be at his cost.

13911. You mentioned superphosphate. Do you apply it?—Yes, on my own farm; he is not able to purchase and use it, but on my own farm I use it.

13912. *The Chairman:* Are those not elements in the cost of cultivation and coming within your general answer that the cost of cultivation is paid for entirely by the tenant?—Yes; except the water rate; in dry land the tenant pays for every improvement.

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Professor Gangulee: I wanted to be quite clear; when you suggested new manures like bonemeal and superphosphate, whether you encouraged their introduction by paying for it yourself.

13913. *Sir Henry Lawrence:* This proportion of two-thirds of the produce which you obtain, is that the ordinary practice in your district?—It is not two-thirds throughout; there are good lands where it will be two-thirds for the owner and one-third for the tenant, but in some cases it is 50 per cent or half to the tenant and half to the owner; that is the general practice.

13914. I thought it was two-thirds throughout?—For the best lands it is two-thirds, for inferior lands it is half and half.

13915. In good lands your share is 66 per cent and in inferior lands 33 per cent?—Yes.

13916. Is that fixed by custom? Has it always been so?—Yes.

13917. Even since you remember, has your share been 66 or 50 per cent?—Yes.

13918. Never less?—Never less; it is not less than 50 per cent. in any part of my district.

13919. *Dewan Bahadur Raghavayya:* In areas where the water supply is precarious it is not so?—Even there, it will not be less than 50 per cent.

13920. In your district?—Yes, in my district.

13921. In some parts does not the landlord also contribute towards the cost of cultivation?—Only in so far as they may advance the money without interest.

13922. He does not share it?—No; but the landholder will improve the land in the way of levelling and bunding.

13923. Is it within your knowledge that in some districts the landowner shares the cost of cultivation and in other places, he gets a third of the produce as his share?—I think in Tanjore there are not enough cultivators; so there may be a less proportion there. There are big *mirasidars.*

13924. What is the value of your land, the land which pays two-thirds and the land which pays half?—The one which pays two-thirds is Rs. 3,000 per acre and the other Rs. 1,000 to Rs. 2,000.

13925. *Sir Ganga Ram:* For Rs. 3,000 you only get Rs. 66? That means only 2 per cent?—We do not get even that in some places.

13926. *Mr. Kamat:* Will you tell me generally whether, although the tenants are theoretically tenants at will, is it or is it not the case that they remain as occupants for a number of years continuously?—Yes, they do.

13927. Now amongst your tenants, tenants-at-will as you call them, how many do you change often or every year?—Practically we do not change a tenant unless we find that he is a lazy tenant.

13928. So that although theoretically they are tenants-at-will, the practice of the country is that they remain as the occupants of the lands for a number of years continuously?—Yes.

Professor Gangulee: There is no other alternative perhaps.

13929. *Mr. Kamat:* I want to ask you one or two questions about the causes of borrowing which you give on page 426. You say the causes of borrowing are the failure of crops on account of bad seasons, loss of cattle by disease, increase of cultivation expenses and so on. Are you quite definite that the causes of borrowing are physical or beyond the power of the agriculturists as a whole?—Yes.

13930. Are you quite definite about that?—Yes.

13931. And that they are not moral causes such as drinking or lack of thrift or extravagance?—It may be so to some extent. Nowadays living also is costly.

13932. In any case those causes are not moral causes?—They may be in some instances to a small extent. Drinking may be the cause in the case of some tenants; not in the case of all.

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13933. Now can you tell me from your experience as a practical farmer and from your acquaintance with the country and districts, whether you think that taking for instance five years on an average, the cultivator has some saving after meeting his family expense from the yield of his land?—Yes.

13934. There is a saving?—Yes. There is one advantage here. I think every tenant in the two crop areas has got enough of straw. He may get some money out of the straw. Suppose he has one pair of cattle for ploughing his land; he will have more straw than his cattle require and he will also get some value for the extra. The whole of the straw goes to the tenant.

13935. So there is a surplus to him?—Yes; only in places where there is good river like the Periyar; but not in other parts.

13936. In the irrigated parts?—Irrigated parts are also protective, because there is a reservoir and if the department want, they can irrigate; it is under the control of the department. Only in such lands is the tenant in a very good condition.

13937. If there is no such source of water, do you mean to suggest that there is no surplus or saving left to him?—Practically there will not be any saving to him, because whatever he spends in the field, he is not able to earn.

13938. In cases where there is no surplus left to him, I want to know how your scheme either of agricultural banks or land mortgage banks will succeed? Now you wish that the agricultural bank should give loans to agriculturists, say, at 6 per cent or whatever the rate may be. They ought to be able to pay that rate of interest, whatever may be the instalment, from the surplus?—Yes.

13939. Now in cases in which you say there is no surplus, how is the agricultural bank to function?—I say it in the next point; unless he manures his field, unless by means of intensive cultivation, he will not be able to save much. If he spends much money in unprotected areas there will be a good crop in alternate years, and his income will be very high in those years if he uses better manures. Then he may be able to have some saving.

13940. Leaving the protected areas out of consideration?—Even in unprotected areas in a favourable season, he may have a good yield.

13941. But you said that in such areas on an average he will be left with no surplus?—Yes.

13942. In such areas, where they are needed most how will agricultural banks or land mortgage banks succeed?—Without intensive cultivation he may not be able to gain much in a favourable season. I did not say there would be failure throughout. At least in a season of good rain he will get more yield. If he takes up intensive cultivation, by this and by other facilities he can expect more yield.

13943. Now I want to know how you reconcile these two statements. In one paragraph you suggest that the rate of interest which agricultural banks or co-operative societies should charge the cultivator should be 6 per cent and in the subsequent paragraph you suggest that it should not exceed 12 per cent. Should it be 6 per cent or something near 12 per cent?—I say that because the small tenants who have no status or very little property are not able to borrow money. In such cases they are paying interest in kind. This interest goes up to 100 or 150 per cent. Such being the case, a 12 per cent rate of interest is a great boon to the ryot. Government are satisfied with 6 per cent. interest; they will not be losers. For the small tenant paying 100 or 150 per cent, is it not a great boon for him to pay 12 per cent?

13944. Will you also explain what you mean by saying that agriculturists should be exempt from arrest for civil debts? Do you refer to money borrowed from moneylenders or from co-operative societies?—Whatever it may be, he should not be harassed like that.

13945. As long as he is an agriculturist he should be free from the penalty of the civil law?—Yes, that is my opinion.

13946. *The Chairman:* Do you think that that would encourage lenders to lend?—In a way it may not encourage moneylenders to give the money.

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13947. *Mr. Kamat:* When 70 per cent of the population are so privileged do you think the moneylender will be able to live?—My point is that the cultivator is now paying 100 or 150 per cent interest.

13948. *The Chairman:* In answer to a question put by myself you estimated the return in the yield of the land with which you are familiar during, I think, the past thirty years, as having decreased by 50 per cent?—Yes, 50 per cent.

13949. The average yield of paddy in pounds per acre estimated in the published Season and Crop Report for Madura district during the last 20 years is as follows:—

From 1905—10	1,000 lbs.	average yield.
1911—17	2,000 ,,	,, ,,
1918 to date	1,950 ,,	,, ,,

Are you familiar with those figures?—I am only going on my own experience and my own impression. No doubt after the Periyar project the income might be a little higher, and even then the yield will not be very high; but there will not be any failure of crops.

13950. Do you know the results of the crop cutting test in your district, *i.e.*, tests carried out by the Revenue Department, and which are now discontinued?—I do not know these results actually, but they select the best part of the crop and then it is a question of mathematical calculation; they will base an experiment even on an area of one or two cents; I do not think it will be very accurate. They select the best portions of the crops.

13951. *Dewan Bahadur Ragharayya:* Is it not the rule that a typical plot will be selected and not the best nor the worst, but typical for the whole tract?—Even with the typical crop they take, they will take the best plot for calculation.

13952. *The Chairman:* I do not quite see how a crop can be typical and at the same time the best?—I think the mathematical calculation which they make on one or two cents will not be quite accurate.

13953. I only wanted to know whether in the face of these figures of which you have now been reminded you desire to leave on the notes your statement, as you are an experienced agriculturist and a responsible person, that the outturn has gone down by 50 per cent per acre in the last 50 years on the average?—Yes.

13954. You wish that statement to be left on the notes?—I still say that from my experience.

(The witness withdrew.)

KHAN BAHADUR M. BAZL-UL-LAH SAHIB BAHADUR, C.I.E., O.B.E., Director of Industries, Madras.

Replies to the Questionnaire.

QUESTION 8.—IRRIGATION.—(*a*) (*iii*) There is ample scope and very great need for the extension of well-irrigation in most districts of the Presidency. The methods adopted by the department in furthering the extension of well-irrigation are—

(*a*) selection of boring sites with reference to local conditions,

(*b*) putting down borings with a view to determine the existence of sub-artesian water currents and their capacity,

(*c*) helping the ryots to sink wells with the aid of pumping plants,

(*d*) deepening wells in hard strata with special drills (this is a proposed measure and the plant required is on order and is expected before the end of the current official year),

(*e*) demonstrating to the ryots the advantages of power pumping, over-baling by *picotta* or *mhote*,

(*f*) helping ryots with loans to sink or deepen wells and for the purchase of pumping plants,

(*g*) erecting and maintaining such plants in working order.

The chief obstacle to the extension of irrigation by wells in this Presidency is the poverty of the ryot which prevents him in many cases from availing himself of the assistance offered by the Department of Industries.

A detailed account of the pumping and boring operations conducted by the department is given below:—

Pumping and Boring operations in the Madras Presidency.

Historical.—In 1903, Mr. (now Sir) Alfred Chatterton proposed that a number of pumping installations should be set up with the object of demonstrating the advantages of modern machinery in agricultural operations. Some work had already been done in this direction, and Mr. (now Sir) Chatterton himself and the Public Works Department had both experimented with pumping by machinery. But these experiments had furnished evidence merely as to the value of lift irrigation on a comparatively large scale, and much scepticism still prevailed as to whether comparatively small areas of land could be profitably irrigated by small engines and pumps. One small installation had already been put up at Melrosapuram in the Chingleput district, and in 1904 permission was obtained to open four other pumping stations where experiments were begun with engines varying in horse power from 3½ to 6 and with 3 and 4 inch pumps. From the first, the progress made was encouraging, and by March 1905 so many applications for assistance had been received that Government agreed to advances being made under the Land Improvements Loans Act for the purchase of oil-engines and pumps, and provided Mr. (now Sir) Chatterton with the nucleus of a staff to assist those wishing to put up installations with advice and supervision. A class for training oil-engine drivers was also opened at the School of Arts. It soon became evident, however, that very few of the wells in the Presidency could furnish enough water to justify the putting up of an engine and pump, and that, in order to bring pumping installations into more extended use, it would be necessary to deepen the existing wells or to sink new ones so as to tap the subterranean reservoirs which were suspected to exist at no very great depth in certain districts of the Presidency. These results had been anticipated from the very beginning, and in 1904 a set of boring tools had been purchased with which experimental borings had been put down in various places. This led to the discovery of

sub-artesian water both in the Chingleput and South Arcot districts, and it became evident that it was desirable greatly to extend the scale of operations. Accordingly, in 1906, the boring branch of the department was inaugurated by the deputation of a special party to the Chingleput district, partly to develop well-irrigation by the expeditious disposal of applications for loans and partly to prevent waste of money by putting down trial borings before wells were sunk. Later on, the operations of the party were extended to the improvement of the existing wells and from this time forward progress was rapid until the outbreak of the war operated as a check. A number of oil-engines were also installed under the advice and with the aid of the department in rice mills and other small industrial concerns for the preparation of agricultural produce for the market; and, in the course of a few years, numerous rice hullers, oil mills, and other forms of industrial machinery were installed. A very large number of rice hullers were put down in the Tanjore district. In the year 1910, there were only some four to five mills worked by power and nearly the whole of the paddy of the district was husked by hand. In that year, however, the Department of Industries installed a small rice-milling plant driven by an oil-engine at Tirukattupalli and the success of that installation induced other people to start similar mills in various parts of the delta. In the following year, 19 similar installations were fitted up and the demand for them increased from year to year until in 1918 there were 215 mills in the Tanjore district representing an aggregate Horse-Power of 5,360.

Transfer of the operations to the Department of Agriculture.—In March 1916, Government decided to add an Agricultural Engineer to the staff of the Agricultural Department and as a corollary to the creation of this appointment they resolved to transfer to that department the pumping and boring operations which until then had been carried on under the control of the Director of Industries. The transfer was effected on the 1st August 1916, the *advisory and inspection work in connection with industrial plants, such as rice hullers, cotton gins, and ground-nut decorticators remaining with the Director of Industries.* This arrangement was adversely criticised by the Indian Industrial Commission in paragraph 307 of their report. The Commission considered that where a well-equipped Industrial Department was in existence, it was a waste of control to have one department installing power plant for agricultural purposes and another for small industries side by side in the same district, that such work was of a totally different character from that which properly belonged to the Department of Agriculture, and that valuable adaptations and improvements were not likely to be forthcoming except from a technical department which commands the services of industrial specialists. The Government in 1920 accepted the Commission's recommendations and directed that the Pumping and Boring Department with the workshop attached to it should be re-transferred from the Department of Agriculture to the Department of Industries. This transfer was given effect to on 9th September 1920. Up to 31st March 1926, 7,862 borings had been put down, the percentage of success being about 60, and approximately 591 pumping and 398 industrial plants had been set up, while a sum of Rs. 6,11,406 had been advanced under the provisions of the Land Improvements Loans Act to 173 persons for the purchase of oil-engines and pumps. The chief difficulties in the way of development since the war have been (*a*) the high price of machinery (which, however, has recently come down considerably) and (*b*) the very high cost of liquid fuel.

Staff and organisation.—The staff of the Engineering Branch now consists of an Industrial Engineer, who is stationed at Madras, four Assistant Industrial Engineers with headquarters at Madras, Tanjore, Coimbatore and Bezwada respectively, 18 supervisors, 40 mechanics, 80 boring maistris and drivers and 16 apprentice boring maistris. The work of this branch consists mainly of the investigation of new engineering projects, of the erection of new installations, the maintenance of pumping installations and industrial machinery already at work, the conduct of boring operations, the supply, erection and maintenance of pumps for erection and the investigation of loan applications under the Agriculturists' Loans Act.

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Information and advice.—General information and advice on engineering questions are given free, provided no local inspection is involved and a considerable number of such inquiries are dealt with during the course of a year. In cases where a local inspection is necessary, a fee of Rs. 15 is payable, in return for which advice is given in regard to the selection of a suitable site for a mill, factory or installation and as to the most suitable type of machinery for the purpose. Advice is also given to Government departments and co-operative societies, from time to time, on a variety of engineering matters. During the year ended 31st March 1926, 159 applications of this kind were disposed of.

System of compounding fees.—In the circumstances of Southern India, it was necessary to provide for the supervision and periodical inspection of the engines, pumps and industrial machinery installed. Under this system, for a fixed fee of Rs. 15 per annum, owners of private installations are entitled to have their plants inspected and overhauled three times a year, and also at other times if special requisitions are received for which, however, extra fees are charged. Furthermore, compounded installation owners are entitled to utilise the departmental workshops for the carrying out of repairs and renewals of component parts of their engines, pumps, or industrial machinery, and the facilities offered by the workshops for the quick, economical and efficient conduct of repairs are greatly appreciated by the ryots and small industrialists, and in fact have helped not a little to popularise the work of the engineering branch of the department. In addition to assisting owners to maintain their plant in good condition, an essential service in a country where there is such a dearth of skilled artisans, this system has the further advantage of enabling the department to suggest improvements and to encourage the industrialist or the ryot to extend and develop his operations. That this service continues to be appreciated is evident from the fact that the number of plants under maintenance during the year 1925-26 was 414 as against 371 in the previous year.

Erection of machinery and plant.—The erection of machinery and plant is undertaken for a nominal fee of 2½ per cent on the capital cost of the machinery installed. This service, while enabling the ryot or small factory owner, to have his engine and pump or industrial machinery erected at the minimum cost, also ensures the engine being set up under proper technical supervision. The number of plants erected during the year 1925-26 was 81.

Loans under the Agriculturists' Loans Act.—As already stated, loans under the Agriculturists' Loans Act are granted by Government on favourable conditions to ryots for the installation of pumping machinery in cases where there is a reasonable prospect that by means of such loans the lands of the ryot will be improved and his income increased. It is frequently found that an applicant proposes to put a power pump in a well which has not enough water to keep a pump going for more than an hour or so. In such cases, the applicant is advised to try to increase the water supply by deepening his well, and if it is found that an adequate supply cannot be provided, a loan is refused in the ryot's own interests, for obviously it is uneconomical to instal an expensive power pump which can work only an hour or so a day. The loans disbursed during the last three years have been as follows:—

	Rs.
1923-24	74,000
1924-25	97,300
1925-26	42,506

The decrease in the number of loan applications sanctioned during the last official year as compared with the preceding year is mainly attributable to the fact that owing to heavy rains in the Coimbatore division in the months of October, November and December the wells were full and no satisfactory and conclusive test of their capacity could be conducted till about the end of March with the result that several applications had to be kept

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in abeyance. Every effort has been made during the last few years to speed up the enquiries preliminary to the grant or refusal of a loan. The department, as already shown, grants loans only on satisfactory proof that the supply of water is adequate, that the water can be used profitably for irrigation and that the borrower can give adequate security while it has also to be ascertained that the Irrigation Department has no objection to urge Investigation on these lines necessarily takes time, but under the existing arrangements avoidable delays are rare and the period of the enquiry has been shortened from years in some cases to a few months.

Boring.—Water in greater or less quantity is an absolute necessity under any agricultural conditions. Water may be secured in rivers or canals or by storage in tanks and much of it actually is obtained in this way. In many cases, however, direct supplies of this kind are not available, and then the ryot has to think of some other way of securing water. The obvious thing to do is to sink a well. A large number of wells have already been sunk in this Presidency, but the number is still inadequate. When a ryot sinks a well. he does so more or less in the dark. He cannot tell whether he is going to strike water until the well is nearly completed, when if his well proves a failure, he finds that his expenditure of, perhaps, several hundred rupees has been fruitless. It is here that the boring section of the department is of assistance, by enabling the ryot to explore for water more expeditiously and chiefly by employing a boring set than by sinking a well. If the boring fails to tap water, another trial may be made somewhere else; if water is discovered, a well can then be put down in the ordinary way. The cost of well sinking is so great that ryots rarely go beyond 30 feet, but it has been found that sweet water has been met with very much further down and the use of boring tools enables us to explore for these deeper supplies also. The department having put down several thousand borings all over the Presidency is often able to give ryots some sort of idea as to whether they are likely to find water or not.

The department has now in operation 9 power drills and 57 hand drills. The drills employed by the department are of two kinds: hand and power. A hand drill is used where borings are shallow and the soil is soft. For boring in hard or rocky strata, or in cases where it is necessary to bore to a considerable depth, a power drill is necessary. The power drills in use during the last few years having proved quite insufficient to meet the needs of the public and other departments of Government arrangements were made for the purchase of additional drills. It was considered advisable, however, that before entering into contracts for the supply of these, the subject of modern boring practice in Great Britain and the United States should be first studied by the Industrial Engineer with a view to obtain the types of drills which are best suited to the conditions in the Madras Presidency, and to carry out an investigation into boring conditions and methods of operation. Drills for use in the Madras Presidency must be capable of being managed by the class of labour which is available to work them, while the relative spheres of usefulness of the hand and power drill also required investigation. There were many other problems in connection with boring operations in respect of which the knowledge of the department was admittedly imperfect and which required investigation in the light of the latest practice. For instance, much more information was required in regard to the efficient operation of drills under varying conditions of strata which are ordinarily met with. The question of keeping the bore hole clear during the drilling operation required study, while another point for investigation was that of the size of the bore-hole. In short, it was considered vitally necessary that the department should bring its knowledge of modern boring practice up-to-date, and that before entering into contracts for the supply of the requisite power drills, the Industrial Engineer should be deputed to visit the United States where both oil and water drilling are highly developed, to study the latest American practice. The great importance of developing agricultural and boring operations in the interests of the economic development of the Presidency appeared to fully warrant the deputation of an officer

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for the purpose. Accordingly Government sanctioned the deputation of the Industrial Engineer to Great Britain and America and he returned therefrom in April 1925. Arrangements were subsequently made to obtain from America three power drills in accordance with the Industrial Engineer's recommendation and these have been assembled in the departmental workshops and have undergone preliminary trials. One of the new drills was set to work in Tondiarpet, Madras, and the daily outturn of work obtained from the drill compared very favourably with that of the old drills, 7 to 8 feet of hard rock having been bored through in a day of 8 hours, whereas with the old departmental drills only from 6 to 24 inches could be drilled in rocky strata per day and slightly more in soft rock. The Industrial Engineer, on his return from deputation, submitted a comprehensive report on the subject of modern drilling practice which contains a great deal of valuable and interesting information and it is anticipated that a gradual and progressive development in drilling operations in this Presidency will result from the Industrial Engineer's investigation. The total depth bored during the last official year was 27,087 feet, the average depth of a boring working out to about 53·3 feet.

Pumping sets.—Well-irrigation in the ordinary way is expensive, and about 25 years ago, the department proved that for lifting water it was often both possible and advantageous to substitute mechanical for animal power. It is often a very paying proposition to put down an engine and pump, but in every case, a very careful preliminary investigation is requisite and this the department is always pleased to conduct. The department maintains a number of pumping plants comprising oil-engines and pumps. These are of two kinds, one of which is used for pumping water for irrigation purposes, and the other for baling purposes in connection with the sinking of wells. The former, which comprises crude oil-engines and pumps, is maintained for the purpose of (1) demonstrating to the ryots the advantage of lifting water by mechanical power and (2) watering crops to save them from withering pending the repair of an existing installation. The second type of plant, which consists of kerosene oil-engines and pumps, is utilised in connection with the construction and sinking of wells. For several years it has not been found possible to comply with more than a small proportion of the applications received for assistance, and accordingly Government have sanctioned the purchase of 12 new pumping sets at a cost not exceeding Rs. 42,000 an indent for the supply of which has been placed with the High Commissioner for India.

Torpedoing.—The torpedoing sets possessed by the department are used for blasting boreholes in rocks in the hope of exposing water sources in the fissures caused by the explosion. Torpedoing is tried as a last resort when a bore through a rock fails to find water. Twenty applications for torpedoing sets were disposed of during the last official year.

Rules for the levy of fees.—A copy of the rules for the levy of fees in connection with the pumping and boring activities of the department is attached* for the information of the members of the Commission. The main object of these operations is to increase the agricultural wealth of the country and as such the fees charged are only nominal. The cost of the district staff, of their travelling, and of the transport of plant renders it impossible, without restricting the value of the work that is now being carried on, to make the engineering branch self-supporting, but with the increasing popularity of the services rendered, and the considerable reductions effected during the last few years in the departmental workshops and in other directions, the net cost of this branch of the department has been materially reduced and there can be no doubt that the public is getting good value for the expenditure incurred.

Industrial Engineering Workshops.—In the departmental workshops at Washermanpet, the machinery employed by the Pumping and Boring and other branches of this department is maintained and repaired. A considerable and increasing volume of repair work is also executed for private individuals who have compounded installations and for other Government

* Not printed.

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and *quasi*-Government departments. Experimental work is also conducted and tests are carried out of new boring tools and departmental plant, both of the Engineering and other branches of the department, manufactured or repaired at the workshops. Further, the workshops provide the necessary training facilities in the assembling and operation of drills and departmental machinery as well as of improved tools and appliances designed by the department, for such of the subordinates of the engineering branch of the department as are newly recruited or require special training. The workshops have been organised with reference to the particular needs of the department and are capable of turning out the work required of it both economically and rapidly. The latter is obviously an important consideration since it is necessary for the departmental repairs to be carried out expeditiously as, if delay occurred in the repair or replacement of an important part of a pumping or drilling plant, not only would the department lose the hire of the machinery but what is perhaps more important, the ryot would often lose a considerable part of his crop.

Question 17.—Agricultural Industries.—(*b*) The question of organising and developing cottage or rural industries with special reference to those industries which are suitable as subsidiary occupations for the agriculturists during the slack season is at present engaging the attention of the Department of Industries. As a preliminary it has been decided that a survey of cottage industries in the Presidency—existing and potential—should first be made, and that the task of developing and organising them and introducing new industries should then be taken in hand. Until the results of the survey are available, and I have had an opportunity of studying the question further, I am unable to make definite suggestions in regard to the adoption of subsidiary industries.

(*c*) *Fruit-growing*.—The Department of Industries has been concerned only with fruit-growing on the Nilgiris in connection with the Fruit Preserving Institute at Coonoor. The object of starting this Institute was to create an organised fruit-preserving industry on the Nilgiris and incidentally to develop fruit culture to supply the requirements of the factory as well as the public needs and to benefit fruit-growers, actual or prospective. The factory building was completed and the requisite plant and fittings were installed during the year 1922-23 and experiments were made with the following among other fruits for the manufacture of jams and jellies; bananas, hill guavas, pineapples, mangoes, oranges, ordinary guavas, peaches, pears, pomelos, raspberries, strawberries, sweet limes, tree tomatoes, and tomatoes. It was demonstrated that jams of fairly good quality could be manufactured, but it was not found possible to displace from the market the imported brands of jams which are already well-known to consumers. Further even if the whole of the present import trade in jams and jellies could be captured, the sales of the factory would not have amounted to a figure representing an economic output. Jam in the case of Indians is more or less an acquired taste and the conclusion arrived at was that the consumption of jams and jellies was not likely in the reasonably near future to increase to a point at which the factory would pay, or in other words, the demand for the products of the factory within the area which it served or could ever hope to serve appeared to be insufficient to absorb an economic output. Government accordingly decided last year that the Fruit Preserving Institute should be closed. Prior to the establishment of the factory a considerable quantity of the fruit grown on the hills was apparently allowed to go to waste owing to the absence of a steady market for it and the establishment of the factory had the effect of stimulating the cultivation of fruit on the Nilgiris. There is a good demand for fruit during the hill season, but during the remaining part of the year, the demand is considerably smaller. It may be expected therefore that the closure of the factory will result in a decrease in fruit cultivation on the Nilgiris or at least will restrict its extension.

Sericulture.—The Government are already taking active steps to expand sericultural operations in the Madras Presidency. There is only one portion

of the Presidency in which sericulture forms an important industry at present, and that is the Kollegal taluk of the Coimbatore district where there are 11,000 acres of land under mulberry cultivation and sericulture forms the main occupation in many villages. The magnitude of the industry may be gauged from the fact that in the Kollegal taluk Rs. 30 lakhs worth of raw silk are manufactured annually. Investigations which have been carried out with a view to determining in which other parts of the Madras Presidency suitable climatic and other conditions requisite for sericultural operations obtain indicate that a number of tracts in various parts of the Presidency either fulfil the necessary climatic conditions or offer other facilities requisite for worm propagation in the cooler months and that the Mysore worm which is the species best adapted for the climatic conditions prevailing in the plains of this Presidency can be successfully reared in many parts where the atmospheric temperature ranges from 75° to 80° F. with 50 to 70 per cent of humidity at least during some portions of the year, and that the bush mulberry which forms its food may be grown over a wide range of soil and in climates possessing an annual rainfall of 45 inches or otherwise possessing irrigation facilities. New tracts have been brought under mulberry cultivation in several districts, the total acreage amounting at present to 80 acres and 90 cents.

The following are the sericultural activities of the department:—

(1) A peripatetic rearing party tours the villages of the Kollegal taluk and instructs the rearers how to carry out the testing of moths and the handling of the worms.

(2) The silk farm at Coonoor has been constituted into a central distributing station for eggs or seeds and into a research institute for cross breeding of worms of different species. For this purpose the mulberry plantation at Coonoor has been extended by the addition of a further 10 acres of land and the construction of a rearing house has been decided upon.

(3) A Silk Superintendent has been deputed to the various selected localities outside the Kollegal taluk to assist private persons in the choice of suitable land for the planting of mulberry and for pruning, weeding and eradicating pests which attack the plant. During the rearing season the duty of the Superintendent is to rear one or two crops with the help of the weaving *maistris* at the respective stations. The silk farm was located at Coonoor partly because worms reared at a high altitude are more vigorous than those bred in the plains, and partly because the seeds are more free from disease and the worms produced from them spin good cocoons and yield a greater remuneration to the rearers. Moreover the climate of Coonoor is best suited for conducting research in cross breeding. The Coonoor seeds sold to Kollegal rearers yield superior and healthier cocoons from which the rearers secure a good crop. Unfortunately the mulberry planted at Coonoor has recently been attacked by a virulent powdery fungus disease and the Government Mycologist is now carrying out experiments with a view to its eradication. Pending the result of these experiments the construction of a rearing house for the station has had to be deferred. During the last official year 10,510 layings of seed were supplied from the Coonoor farm to Kollegal and 2,845 layings to the newly-started sericultural areas in other districts of the Presidency. The proportion of the Kollegal requirements of seed, which can be supplied from the sericultural station at Coonoor, is at present relatively small, the total requirements amounting to about 75 lakhs of laying per annum. Even when the operations at Coonoor are fully developed, it is not anticipated that it will be possible to produce more than 3 lakhs of laying per annum for distribution to the rearers in Kollegal. Obviously therefore the bulk of the rearers will still have to depend upon Mysore for supplies, and hence efforts are being made by the department to

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educate the rearers to test their own moths. It is with this object that the use of the microscope is demonstrated by the peripatetic rearing party. The industry has been so long established in Kollegal that the ryots of that area possess already a knowledge of mulberry growing, of rearing of worms, and of the production of silk. The one difficulty with which they are faced is the prevalence of "pebrine," a disease with which a large proportion of the moths is infected, and which results in the death of the silk worm at the very time when the rearing operations are almost over and the worm is ready to spin. Much of the disease results from ignorance, neglect and unsuitable rearing houses and, as silk worm rearing is purely a cottage industry, the peripatetic rearing party is obviously the most effective agency for demonstrating the importance of pure air, space, cleanliness, regular feeding, etc., to the rearers in their own homes. The rearers are gradually becoming convinced of the superior qualities of tested seed and the greatly improved prospects of raising crops by the use of such seeds.

(*d*) In connection with the development of industries the policy of Government has been—

(*i*) to start pioneer industries with a view to ascertaining the commercial possibility of manufacturing articles not produced in the Presidency, and

(*ii*) to grant State aid under the provisions of the Madras State Aid to Industries Act to private enterprise for starting new industries.

In view of the facilities offered by the State Aid to Industries Act, Government consider that the experimental work of the Department of Industries should not ordinarily go beyond the laboratory or preliminary investigation stage and pioneer manufacture on a commercial scale should be left mainly, if not entirely, to private enterprise.

As Madras is primarily an agricultural Province, the development of industries is likely to be chiefly in the direction of converting and working up into manufactured or semi-manufactured form the agricultural and forest products of the Province. I doubt, however, whether, generally speaking, it is necessary for Government to take an active part in the establishment of industries connected with the preparation of agricultural produce for export or consumption. Many of these have already been developed considerably by private enterprise and financial assistance for the establishment of new or nascent industries is afforded by the State Aid to Industries Act. For example, the Kallakkurichi Co-operative Agricultural and Industrial Society has been granted a loan of Rs. 18,600. The main activities of this Society, whose factory is well situated in the centre of a large agricultural area, consist of the milling of rice and the decortication of ground-nuts. The crushing of sugarcane and the manufacture of jaggery have also been undertaken. There is undoubted scope for the establishment of many similar factories in other areas for the utilisation and working up into manufactured form of the agricultural products of the Province, and it is perhaps in the direction of assisting financially industrial co-operative societies of this kind that the Act will find its greatest scope and usefulness.

There is another direction in which the Department of Industries can assist in regard to the development of agricultural industries and that is in experimenting with a view to the evolution of improved machinery for the preparation of agricultural produce, *e.g.*, a ground-nut decorticator. The trade in ground-nuts is of great economic importance to Madras, the exports in the last three years having averaged about 850 lakhs of rupees or an average of slightly over 22 per cent of the total export trade of the Presidency. The condition in which the kernels are shipped, however, leaves much to be desired and if an improvement in this respect could be effected, the economic benefit which would accrue to the Presidency would be very great. Ground-nuts from

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the Coromandel Coast and also to a lesser extent from other parts of the Presidency arrive at Marseilles in a heated condition and this is ascribable to the fact that the kernels are often damped before shelling and are not subsequently properly dried with the result that in the voyage, they very often heat, sometimes so badly as to become charred. The solution to this problem is the evolution of a more satisfactory machine decorticator. Two methods of decorticating ground-nuts are followed in Madras, hand and machine shelling. In the former case, the shells are almost invariably damped to facilitate the removal of the kernels with the result that the kernels become black and rancid during the voyage and frequently arrive at Marseilles in a heated condition. The oil produced from such kernels is rancid and bitter and being inedible is used chiefly in the manufacturing of soap. In the case of machine shelled nuts, the shells are not damped at least to anything like the same extent and in consequence arrive in a better condition and command a higher price since they are utilised for the production of edible oils. In the process of shelling by machinery fewer kernels are also broken. The producer thus gets a better price for his produce and the export merchant secures kernels which are not so badly damaged and at the same time are dry and comparatively free from stone and dirt. In the Ceded Districts, the ground-nut crop is decorticated mainly by machinery and a number of decorticating machines have also been installed in Vizagapatam, Tanjore, Trichinopoly, Salem, Coimbatore and North Arcot. On the other hand the crop in South Arcot and Chingleput is shelled almost entirely by hand.

The machines which are in general use for decorticating ground-nuts are not satisfactory as the breakage of kernels is considerable. A high percentage of broken kernels is a serious defect as rancidity often spreads from the broken parts during the voyage. The problem of evolving a machine capable of shelling dry nuts with a minimum amount of breakage and which can be supplied at a price within the reach of the ryot or small factory owner is therefore one of great importance. If a satisfactory decorticator could be evolved, and if export firms placed, as they no doubt would, a premium on the price of undamaged whole nuts, shipments of Madras ground-nuts would arrive at Marseilles in a much better condition and would realise an appreciably higher price than at present.

Cotton-ginning.—There are already a considerable number of cotton ginneries in the several cotton tracts of the Presidency and there is no necessity for Government to set up ginning factories in any district.

Rice-hulling.—There is no necessity for Government to demonstrate or pioneer the hulling of rice by machinery as the industry is already highly developed in the rice-producing districts.

(*f*) In my answer to question 17 (*b*), I have referred to the projected survey of cottage industries. It is hoped by this survey to collect detailed information regarding the existence of cottage and rural industries, the methods in force, tools and appliances used, and the number of persons employed in them, as also with reference to such questions as the availability of the requisite raw materials and markets for finished products. It is hoped that the result of this survey, when available, will afford a basis for the extension of rural industries on an economic footing, and for the organisation on an increased scale of subsidiary occupations for the agriculturists. The problem is, however, rendered difficult by the fact that cottage industries, unless resorted to as subsidiary occupations, are for the most part uneconomical. The remedy in such cases is the formation of co-operative societies.

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Oral Evidence.

13955. *The Chairman: Khan Bahadur Bazl-ul-lah Sahib Bahadur,* you are Director of Industries under the Government of the Madras Presidency?—Yes.

13956. You have provided the Commission with a note of the evidence which you desire to give. I should like to know whether at this stage you wish to make any statement in amplification of that statement or whether you would like me to proceed at once to ask you one or two questions?—I am an administrative officer, not a technical officer. I have taken over charge quite recently, three or four months ago. I do not think I shall be able to make any useful statement.

13957. I understand that these notes of evidence which you have provided us with are to be read in conjunction with the Memorandum on Subsidiary Occupations which has been in the hands of the Commission for some time. Are you familiar with that note?—I have not seen the note; beyond the Questionnaire I have not been furnished with anything.

13958. Then I should like to take you to the text of your written answers to our Questionnaire, and to ask you questions on them. On page 446 in answer to our question 8 (*a*) (*iii*) you say, "helping ryots with loans to sink or deepen wells and for the purchase of pumping plants." How are you going to help the ryots to do that?—Pumping plants are used to pump out the water when it prevents further operations of boring. I have brought my Industrial Engineer, Mr. L. S. Pinto, with me.

13959. Would you like him to sit by you?—Yes.

13960. There is no reason why he should not answer the technical questions himself; I shall take it unless you say otherwise that you agree with everything he says?—I will correct him where necessary.

(*At this stage Mr. L. S. Pinto, Industrial Engineer, was called in*).

13961. How do you go about helping the ryot with loans to sink or deepen wells and for the purchase of pumping plants?—*Mr. Pinto:* First of all, we put down a bore for him; if he decides there is enough water there, he sinks the well. Generally water is found in coastal districts close to the surface. When he digs deeper down so much water comes in that he cannot dig any further because the diggers cannot go down; so we pump out the water for him; we pump with high speed engines for about 15 minutes; this gives him time to dig further down; the water collects again, and again it has to be pumped out.

13962. Who pays for the pumping?—The ryot pays.

13963. There is no question of giving him anything for nothing?—Absolutely not. In this connection, I may say that in the interests of the Agricultural population, it is advisable to reduce the fees that are levied at present if they cannot be abolished altogether. At present the fees are high, and I think they prevent the ryot from taking full advantage of the service.

13964. Are the fees charged more than paying the cost of the work?—No, but I think it will be a great advantage to the ryots if we reduce them. It will tend to develop agriculture.

13965. You think it will be in the interest of the country if the ryot is helped to that extent at the expense of the general taxpayer?—Yes.

13966. You say, "Deepening wells in hard strata with special drills." In this Presidency, is the subsoil water table sinking?—*Mr. Pinto:* Not that I know of, except perhaps in certain tracts of Coimbatore where the water is derived from rocky strata.

13967. This is a matter of deepening wells which ought to have been made deeper in the original instance?—In the case of wells sunk by ryots (I am speaking of wells in rocky strata) the wells are generally dug over a very large area, say 100 ft. by 100 ft. He goes down to 20 ft. and finds a certain amount of water by percolation through fissures or cracks

in the rock; the percolation is very slow through hard strata, and the water he gets overnight is not enough to last for the day. If he deepens that and enlarges the percolation area he will get a larger quantity of water and naturally he irrigates more land. That is the object in deepening wells.

13968. Before we proceed any further, Khan Bahadur, may I know the extent of your responsibility in the matter of irrigation; do you go outside well-irrigation at all?—No.

13969. Not at all?—Not at all; we provide facilities for pumping water from wells, but we do not proceed beyond well-irrigation.

13970. Do you not proceed beyond well-irrigation to the point of lifting water from channels?—No; but in certain cases the ryots ask us, and we simply arrange for their plant; they work it and maintain it; we help them in that way.

13971. That is pumping from channels or from rivers?—Also from the rivers, provided they get permission from revenue authorities.

13972. So, if I correct my original question and say that the scope of your responsibility does not extend beyond power-lifting of water, that would cover the whole thing?—Yes; it does not extend beyond power-lifting.

13973. You have been good enough to give a very interesting and a complete annexure* containing an account of the pumping and boring operations in the Presidency. That, I think, speaks for itself. May I ask you to take page 451 of your note; you are answering our question 17 (b) about Agricultural Industries; perhaps we had better call these spare-time occupations?—Yes.

13974. You say, "The question of organising and developing cottage or rural industries with special reference to those industries which are suitable as subsidiary occupations for the agriculturists during the slack season is at present engaging the attention of the Department of Industries." As a preliminary you have decided to conduct a survey of the spare-time occupations amongst the rural population in the Presidency. Will you tell the Commission how exactly you are conducting that survey?—We have not initiated the survey yet. I have asked for the services of a special officer to start the survey and I have not heard from Government. The lines on which I propose to make the survey are to collect information regarding the history of each industry showing when it was started, where it is carried on, how many people are employed in it, whether they are full time workers, or part time workers and if the latter, how long they work and what other work they do.

13975. Have you formed any view yourself as to which spare-time occupations are likely to afford the best hope of useful employment for the cultivators?—I think spare-time occupations should chiefly be in the way of converting and working up into manufactured form the agricultural and the forest products of the country.

13976. Forest products?—As well as agricultural products.

13977. Do you think there is advantage in the ryot working up his own raw material rather than having to purchase partly manufactured goods or raw material from other sources?—Yes, for his own needs and for the needs of the locality.

13978. I take it that is really all the information you have to give the Commission on that point since your survey has not yet been initiated?—Yes. In regard to that, I consider that although we have got here an Act, called State Aid to Industries Act, which provides for State aid to these spare-time industries, so far as the spare-time industries are concerned the Act has remained a dead letter because the Act, I think, is not simple enough nor is it liberal enough, to enable these spare-time industries to avail themselves of its provisions. The Act requires a certain amount of security to be furnished and these spare-time industrialists will not be able to furnish that security.

* Not printed.

13979. Have you considered the possibility of getting over that difficulty by interposing a co-operative organisation?—I have not looked into it in great detail, but I think the Act will have to be suitably amended, or a new Act will have to be framed to meet the case of these cottage industries.

13980. Have you considered the possibility of interposing a co-operative organisation between the department and the cultivators in employing that Act?—Yes. In fact, that is one of my ideas. I think these loans ought to be advanced to co-operative societies who would be able to advance the loans on the personal security of the individual industrialists.

13981. May I turn to page 451, "Agricultural Industries—Fruit-growing." I do not know whether you would agree with me that the story of the fruit-preserving experiment seems to be a very sad one?—It is a very sad one; I agree with you, because although I am satisfied that it was want of a market that brought about the collapse of the concern, I personally think that if proper investigations had been made in other directions, for instance in the way of preserves, syrups, and things of that sort, possibly there would have been a market. Jams and jellies, as I have said in my note, are more or less an acquired taste among Indians and even if we could have captured the whole of the export trade, we probably would not have had a satisfactory market. But syrups and preserves and things of that sort have not been tried and I am glad to find that Sir Frederick Nicholson has taken over a portion of the machinery with a view to trying it on preserves and syrups. If he meets with success, he might start a small industry. At present, as I have said in my note, on account of the closure of the factory, fruit cultivation in the Nilgiris is likely to be a great deal restricted.

13982. You will probably agree with me that the one and only consolation in a failure is to try and make use of the failure as a lesson for the future?—Yes.

13983. With that in mind, I want to ask you whether you can tell the Commission, whether some preliminary commercial survey, as distinct from a technical survey, was made before this venture was launched?—I think the venture was launched at the instance of Sir Frederick Nicholson who I am sure, must have made some preliminary survey, but I am not sure whether any preliminary survey was actually made.

13984. You know that in the choice of management there are always two considerations, technical experience and commercial experience and management?—Yes.

13985. You probably agree with me that by far the most difficult to discover and by far the most important is the commercial experience and management?—I entirely agree with you.

13986. Can you tell the Commission who was in charge of the commercial side of this venture?—The venture is now closed.

13987. I asked who was in charge?—I think it was some European gentleman, Captain Bryant.

13988. Do you happen to know what his experience has been on the commercial side?—I do not know much about it, but I do not think he had much commercial experience; I personally think that his management of the concern was not a success.

13989. Do you think I have hit the weak spot?—I think so.

13990. You point to the fact that jams and jellies in the case of Indians is more or less an acquired taste. Do you know the figures of import into this Presidency of jams and preserves?—No; I cannot give it off-hand, but will supply later.*

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* Imports of jams and jellies into the Madras Presidency:—

Years.	Quantity. Cwt.	Value. Rs.
1922-23	1,067	74,553
1923-24	1,584	95,707
1924-25	1,737	98,517

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13991. Is it very considerable?—I think it is fairly considerable.

13992. Is it mainly on account of the demand by Europeans, or is it also on account of an important demand by Indians?—Mostly from Europeans; very little from Indians.

13993. But there is such a thing as creating a demand by adequate advertising?—We tried it; I do not think it was possible to do it; it was not possible to displace the imported jams which have already found favour with the public, and it was difficult to compete with them.

13994. Did you try by advertisement to expand the demand among Indians?—I think attempts were made by having some sort of travelling agents, but they were not successful. My point was they did not extend the operations to other things like preserves and syrups.

13995. Do you happen to know how much capital was involved, and what is the story of the losses from year to year?—I am afraid I have not got the figures.

13996. Perhaps you could let us have those figures?—Yes.*

13997. How long was this experiment persisted in?—I think for 3 years; it was started in 1922-23, and it was closed a few months ago.

13998. Were you yourself in favour of closing it down?—I was not here; the orders were passed before I took over charge.

13999. Would you be in favour of closing it yourself?—I should not; until further experiments were made.

14000. Two years is not so long a period?—No.

14001. Do you know whether any technical experiments or experiments in technique were being made at the factory?—I do not know; probably they were being made; they must have been made because Sir Frederick Nicholson was connected with the factory, he was supervising it, and he would certainly have insisted on the technique being studied.

14002. There was no private capital involved?—No.

14003. Would you agree that where technical experiments and demonstrations are being carried on, it is sometimes more difficult to make a profit in the commercial sense than it would be if commercial considerations alone held the field?—I agree.

14004. *Mr. Kamat:* Did you advertise for private enterprise to come and take up this concern?—Yes.

14005. Nobody came forward?—Nobody.

14006. Did you disclose the cost of production?—Yes we disclosed everything but the prices offered were so low that we did not think it was worth while accepting them.

14007. *The Chairman:* I have read your notes on sericulture on pages 451 to 453 with much interest, as I am sure my colleagues have. In the matter of this fungus which is attacking the food plant, the mulberry, do you know whether that fungus has been giving trouble in Mysore?—I do not know; I do not think it has appeared in Mysore at all, because if it had appeared in Mysore, the Mycologist would have known how to deal with it. At present he does not know how to deal with it, and he is trying his best to devise means for stopping its spread.

14008. Who would be responsible in the administrative sense for seeing that the experience of Mysore was sought: your own department or the Agricultural Department? Are you entirely responsible?—I think we are entirely responsible.

14009. You find in Mysore administration a very friendly neighbour, do you not?—Yes; they are only too willing to help wherever possible; I personally think that enquiries were made, I cannot vouch for it, and it was found that there was no such disease in Mysore.

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* *See* Appendix I.

14010. You talk about the use of the microscope being demonstrated by peripatetic parties; is it suggested that the ryot should buy and himself use a microscope?—Yes; the ryots or a small co-operative society can do it; a microscope costs about Rs. 200 to Rs. 300, it is not much; a few ryots can join together, or the whole village may do so, and they will be able to test their own moths, provided they know how to use it.

14011. Could you give the Commission a statement of the volume of the silk trade in the Presidency and its value? If you cannot do it now, you could let us have it?—I will let you have it.*

14012. On page 453 you mention the Madras State Aid to Industries Act, in your answer to our sub-section (ii), section (d), of question 17, I should like to ask you a general statement of the provision of that Act; you have said something about it already?—Yes.

14013. Can you tell us a little more about it? With regard to the applicability, as regards the details of its provisions, it empowers you, I understand, to place the general funds of the Presidency at the disposal of industries on certain conditions?—With regard to new or nascent industries or industries which have not been developed in a particular area and cottage industries; these are the industries which are eligible for State aid.

14014. Established industries have no claim?—No.

14015. You told us, I think, that security must be available?—The whole of the assets of the concern is to be the security.

14016. In the form of real estate or in any form?—In any form but no loan should be made exceeding the value of 50 per cent. of the net assets.

14017. Is any interest charged?—Yes, it is now 6½ per cent.

14018. Is the rate of repayment fixed?—Yes.

14019. Is it the same in every case?—It varies according to the terms of the grant.

14020. What is the period of the loan, as a rule?—It is 20 years.

14021. It is all long-term?—Yes.

14022. *Mr. Kamat:* Is there no limit to the amount advanced?—No.

14023. *The Chairman:* If you would like to reserve any of these points, you may let us hear about them afterwards; one does not carry all the details in one's head?—Yes.

14024. You said quite definitely that in your view the Act, as at present framed, does not enable you to do what you would like to do for spare-time occupations amongst the rural population?—It does not; the Act requires and insists upon a proper system of accounts being kept and the accounts being audited by a Government auditor, and the property has to be insured. All these things are not applicable to a cottage industry, because the cottage industrialist will not take the trouble to maintain accounts on the scale required by the Act, and he would not incur the expense of insuring the property.

14025. You say, "the experimental work of the Department of Industries should not ordinarily go beyond the laboratory or preliminary investigation stage and pioneer manufacture on a commercial scale should be left mainly, if not entirely, to private enterprise." So that your department, under the terms of this Act, does undertake a certain amount of preliminary scientific investigation?—It does.

14026. At the request of the manufacturer?—Yes; we start the thing as a pioneer factory, make the investigation, and then hand it over to private enterprise.

14027. You finance those preliminary investigations, do you?—Yes, we do.

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* *See* Appendix II.

14028. Have you ever undertaken investigations at the request and at the expense of established industries?—There have been no cases where such applications have been made.

14029. Would you consider them favourably?—Yes.

14030. What machinery for research is at your disposal?—We have got a laboratory in connection with the Textile Institute, and we have got a similar laboratory for sericulture in Coonoor. We have got the industrial workshop. The laboratory in the Textile Institute is used in connection with the Leather Trade Institute also.

14031. The point I notice and which will interest the Commission is in the middle of page 453. There you talk about the Kallakkurichi Co-operative Agricultural and Industrial Society having been granted a loan of Rs. 18,600?—Yes.

14032. Is that an old established co-operative society?—Yes.

14033. Are there many such societies in the Presidency?—Not many, unfortunately; I wish there were more.

14034. Do you happen to know when it was established?—I cannot give you the year, I think it was established about 8 years ago.

14035. And it has proved a success?—Yes.

14036. It is working under the Co-operative Department?—No, the Co-perative Department exercises supervision over it, but it is more an agricultural and industrial society on a co-operative basis.

14037. Have you had applications from any other co-operative organisations for assistance?—No.

14038. Then you are talking about the necessity of improving the ground-nut decorticator?—Yes.

14039. I observe from your note that you are familiar with the complaints of the market, that ground-nuts are very often reduced in value by the manner of decortication in the Presidency?—Yes; in fact, I have asked the Industrial Engineer to devise some sort of cheap and simple ground-nut decorticator.

14040. Has your department issued anything in the nature of a leaflet to the public, explaining the position and pointing out the loss in value which this practice involves?—I think we have issued a leaflet.

14041. Is it in the vernacular or in English or both?—I think I saw it in English; I am not sure if it is in the vernacular.

14042. Perhaps you would let us know?—Yes.

14043. Perhaps you would let us have copies of that?—Yes.

14044. Has your department considered the advisability of extending the use of the wind-mill as a source of power for agricultural purpose?—*Mr. Pinto:* Tehre are very few wind-mills in this Presidency and the capacity of a wind-mill to pump for irrigation is limited; it wants a certain velocity of wind, which is absent in most of our districts.

14045. Does that include the sea coast?—Including the sea coast; in Madras a wind-mill was actually tried, but it was not found to be economic: it did not give enough water at the existing rates of the velocity of wind prevalent in Madras.

14046. The public think that the question is very simple, but as a matter of fact it is not so simple. Am I not right in saying that it is a technical and difficult subject?—It is.

14047. Are you satisfied that sufficient experiments have been carried out by sufficiently skilled persons to establish the fact that the wind-mill can make no contribution towards the agriculturist's problem?—I cannot say that; the only experience I have is of a certain party in a certain district who asked me if we could put up a wind-mill to pump the water from his well, for irrigation purposes. I asked the wind-mill manufacturers in Great Britain and America and sent them the average velocity of the wind prevalent in the district.

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14048. *Professor Gangulee:* Which district is it?—Cuddalore; and they told me that the velocity was not sufficient to give a sufficient outturn. I forwarded the correspondence to the party, and there the matter rests.

14049. *The Chairman:* I should like to have, if possible, a statement as to whether you are satisfied that the persons in charge of that experiment were qualified?—The experiment was made by Sir Alfred Chatterton about 10 or 15 years ago.

14050. Are you referring to the experiment made in 1920?—No, not the 1920 experiment.

14051. Do you know anything about the experiment made in 1920?—No.

14052. *Sir Ganga Ram:* Are you a Civil Engineer?—I am a Mechanical Engineer.

14053. Where were you trained?—In England.

14054. Where?—In Armstrong College, Newcastle-on-Tyne.

14055. Are you a Member of the Institute of Mechanical Engineers?—Yes.

14056. Do you know that the minimum velocity of wind which is required to work a wind-mill is 20 miles an hour?—Probably; I cannot tell you.

14057. What is the shape of wells generally in this Presidency; do they make rectangular wells or circular wells?—They are both rectangular and circular.

14058. Do they sink wells?—Yes, in connection with pumping plant.

14059. Rectangular wells are generally made in hard strata?—In Coimbatore all the wells are rectangular; and in soft soils where water is obtained from sandy strata, the wells are generally circular.

14060. How far have you taken the borings?—Up to 500 feet.

14061. Have you any section of a boring?—I may have a section.

14062. Will you send me a section of a boring?—Certainly.

14063. What kind of rock do you bore, stratified rock?—All kinds of rock.

14064. There must be a different strata. Is it stratified?—We might have stratified rock.

14065. Have you tried this torpedoing method?—We generally try it in granite.

14066. It is rather applicable to stratified rock?—It is, if you have hard stuff with fissures in it.

14067. You may take it from me that it is really applicable to stratified rock so that you can put the dynamite or powder; it will shatter it and cause more fissures for water to come in?—Yes.

14068. When you find scarcity of water in trap rock you bore it?—Yes.

14069. When you find scarcity in the other wells, what do you do?—We bore them also.

14070. How far do you bore?—That depends on the financial capacity of the ryot, how far he wants us to go.

14071. But you must go down to the sand level?—No; if he has not got the money we cannot go on.

14072. Then that boring is of no use?—Boring is no use unless you find water.

14073. But you must find water-bearing stratum?—Yes, but if the man has no money we cannot work on credit or free of charge.

14074. And if any person wants you to advise him as to the size of the engine are you able to do so?—Yes.

14075. Perhaps you have read the book written by Mr. Chatterton on Lift Irrigation?—I believe I read it some years ago.

14076. He says that one of his pet wells earns Rs. 2,000 an acre; is that right?—I cannot remember.

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14077. Can you give me any idea of the cost of raising water from the wells?—The cost of raising water depends upon the depth, on the total lift.

14078. But how much is it per foot of lift per acre; can you tell me?—I cannot tell you off-hand.

14079. Will you calculate it and give me the figure?—Yes.

14080. The cost of lifting water per foot of lift per acre, or if it is a sliding scale then give me the formula?—Yes.

14081. Are you aware of this new system of combining wells and pumping from one station by compressed air?—Yes.

14082. Have you tried it anywhere?—I have not tried it here.

14083. *Sir Thomas Middleton:* Has it come to your knowledge that there have been great improvements in the designing of wind-mills in the last 6 or 8 years?—Yes; I know there have been considerable improvements.

14084. Have you heard of the systematic tests conducted by the Agricultural Engineering Department at Oxford University in 1923-24?—No.

14085. I am going to suggest that you might apply for the report on these tests, you can get it if you address the Ministry of Agriculture, London?—Thank you.

14086. A large amount of research work has been done and I think you will find that former ideas as to the wind-velocity required will have to be revised?—Yes.

14087. Are there any districts in the Presidency in which you have made a sufficient number of deep borings to suggest that there may be large supplies of untapped water at depths of 200 or 300 ft?—We have not made a sufficient number of deep borings in any district.

14088. I see you refer to the fact that your tools will now bore to 350 ft?—We have got drills now that can bore to 1,000 feet.

14089. What number of deep borings exceeding 300 feet have you been able to make so far with your new tools?—Three.

14090. And from that you can form no estimate?—No estimate at all.

14091. *Dr. Hyder:* What is the cost of a decorticating machine?—If they are made in India they cost about Rs. 300.

14092. Do Kirloskar Brothers supply you with these machines?—Yes; they also make decorticators.

14093. Do you prefer step-wells to draw-wells? I find in your Presidency that you have got to go down by means of steps to fetch water from the wells. Is that preferable to the other system of draw-wells, that is to say, circular wells?—We are only concerned with wells for irrigation; with wells for irrigation you do not go down at all to fetch water by hand. Either you use the bulls, or a *picotta* worked by man, or an engine. We are not concerned with water for drinking purposes.

14094. By these *picotta* you are referring to that device of a long beam of wood?—Yes.

14095. But they are open, are not they a sort of reservoir?—They are wells; they pump their wells where the lift is very low; they may be open pits.

14096. *Dewan Bahadur Raghavayya:* A special officer was appointed to collect exhibits for the Wembley Exhibition?—(Khan Bahadur Bazl-ul-lah Sahib Bahadur). Yes.

14097. Has he left any information which would enable you to form an idea as to which cottage industries are most prevalent in the country?—He has only left a list of exhibits at the Exhibition.

14098. He has left no literature on the subject regarding the extent to which these industries are practised?—No.

14099. *The Raja of Parlakimedi:* Do you get frequent applications for well-boring sets?—Yes.

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14100. What are the factors you take into consideration before you comply with such requests?—The only factors are whether we can spare a boring set and whether the man can afford to pay the fees in advance. These are the two factors which are taken into consideration.

14101. Do you not take into consideration the area also?—Area of what?

14102. The locality. Suppose there is a demand from a dry area and also a simultaneous demand from a wet area, do you not give preference to the latter?—No; we do not.

14103. You simply follow the order of receipt of the applications?—Yes; also suppose there is a boring set working in any particular locality, if we get an application from near that locality, at the time we apply it there in preference to some other boring applications which were made previously in a different locality further away, so as to enable us to carry the set easily to that place; otherwise it will mean heavy transport charges.

14104. But if the ryot is prepared to pay that of course you comply?—We charge a fixed transport charge whether it is next door or 100 miles away; the transport charges are fixed.

14105. You mention in the note that you have 40 in number; is that sufficient?—It is not sufficient; we could have more.

14106. So there is a greater demand for such things than you can afford to supply?—Yes.

14107. What is the official formality the applicant has to go through to get a set of borings?—No formality at all. He simply applies either to the local Supervisor or to the local Assistant Industrial Engineer or to the Director of Industries. He simply says, 'I wish to have a boring set in my land at such and such a place' and if we have a boring set free anywhere near we send it to him, or we tell him, 'all right we have registered your application and will send you one as soon as one is free'. When we have a number of applications registered in the locality we simply say 'you will have to wait and take your chance after the others have been satisfied'.

14108. You mention in your note that Rs. 15 is fixed as fees for lending machinery for different purposes?—That is only for the inspection.

14109. Do you not think that some smaller rate should be charged if the application is entirely for the benefit of agriculture?—I have already said it should be reduced.

14110. *Sir James MacKenna:* You have twice said, once in reply to the Chairman and once in reply to the Raja Sahib, that you regard the fees as high. Would you like them to be reduced, if not abolished?—Yes.

14111. At present I suppose the fact of the matter is that this well-boring proceeding is quite outside the scope of a small cultivator. He must be a successful cultivator and well-to-do before he could take the question up?—Yes.

14112. Then I take it it would be possible to instal a pumping set which would benefit a collection of small lands belonging to a group of smaller holders?—Yes.

14113. Do you think it would be justifiable to suggest that in a case like that the scheme should be financed by a grant-in-aid from Government to the extent of half the cost of installation, the other half being met by the group of cultivators concerned?—That is a good idea provided you have a group of cultivators, or a co-operative society. You cannot do it otherwise.

14114. That will be best?—Yes.

14115. Once that grant-in-aid has been given the maintenance should be carried out by the group?—Yes.

14116. You think that scheme is worth following up with a view to getting at the smaller cultivator?—Yes.

14117. One or two questions about your State Aid to Industries Act. You told us that you finance up to 50 per cent. of the scheme?—Yes. 50 per cent of the value of the net assets.

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14118. Have you had any applications approximating to 10 lakhs?—We have given a loan of Rs. 4,50,000 to the Carnatic Paper Mills.

14119. Before you give a grant of that extent what examination of the proposal do you make? On whose authority is the grant made?—The Board of Industries have to pass the application. The Director of Industries is the Chairman, and with the advice of the Board he sends the application on to the Government recommending it to the Government and after being satisfied that the assets are sufficient security, Government sanction the loan.

14120. And the feasibility of the project is also examined?—Yes.

14121. In a case like that you take the opinion of an expert paper manufacturer?—Yes.

14122. On Saturday a witness stated that if Government show the way the public will take up a scheme; is that your experience in Madras?—What scheme?

14123. He did not mention any scheme; he made a general statement that if Government show the way the public will take it up. That was largely in reference to a pioneer industry?—It is a very general statement.

14124. I think it is. Probably you would rather not express an opinion. I was going to quote one particular case we all know of a soap factory which has been a success but nobody would take it up?—It has been a success.

14125. Has nobody taken it up?—No. We have not decided to hand it over to private enterprise yet.

14126. *Professor Gangulee:* In reply to Sir James MacKenna you referred to the Board of Industries; I think you probably referred to the Board under the State Aid to Industries Act?—Yes.

14127. What is the exact relation of your department with that Board?—All the applications for loans have to be placed before the Board of Industries who scrutinise them. The Director of Industries is the Chairman of the Board; the Finance Secretary is a member and the Deputy Director is the Secretary of the Board; and a number of non-official gentlemen with commercial experience sit on the Board.

14128. And this State Aid to Industries Act was originally meant for cottage industries?—I do not think so; that is only one of the classes of industries which could be helped by Government; there are three classes of industries eligible for aid.

14129. The main object was not definitely for cottage industries?—I do not think so.

14130. You stated here that a loan of Rs. 4½ lakhs was made to the Carnatic Paper Mills. In that particular year did you give any loans to small industries?—You mean cottage industries?

14131. Yes.—There was no application from the cottage industries. That is what I said. The Act does not lend itself to helping cottage industries.

14132. Do you think that the public is fully aware of the advantages they might get under this Act?—I think so.

14133. In your department how many experts have you?—We have a Textile Expert; we have an Industrial Engineer; we have a Leather Expert; we have a Sericultural Assistant, a Soap Expert; and there are others called Supervisors.

14134. One for soap, one for silk, one for engineering purposes, one for textiles, one for tanning, these are the technical officers. Are these men all trained?—Yes.

14135. And they are under your administration?—Yes.

14136. With regard to the fruit industry, you are going to give us a statement, are you not?—Yes.

14137. Will you kindly include in that statement* the method of preserving?—Yes. We have not investigated the method yet.

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* Not supplied.

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14138. The actual method you adopted in the factory in making the jam?—Yes; whether it was a vacuum process or what process?

14139. And then the cost of production?—Yes.

14140. And the total output of jam and jellies?—For what period?

14141. From year to year. I find from the Administration Report that your loss last year was something like Rs. 20,000 for one year?—Yes.

14142. Do you know of any other industrial establishment in this Presidency which is worked at a loss?—In fact the other institutions are all instructional institutions; and they are bound to work at a loss; the Textile Institute and the Leather School work at a loss.

14143. What about the soap factory?—Last year it worked at a loss; in previous years it was working at a profit.

14144. It worked at a loss only last year. In the previous years there was a clear profit?—Yes.

14145. With regard to Sericulture. The Kollegal taluk borders on the Mysore State?—Yes.

14146. You say that the particular disease (you are probably referring to pebrine) is very serious in that taluk?—No. Pebrine is a disease which attacks the worms. I refer to the powdery fungus disease which attacks the mulberry plant. Pebrine is a disease which attacks the moth just at the time which it begins to spin the cocoons.

14147. Who are the sericulturists? Are they agriculturiits also?—Most of them are silk weavers.

14148. And there are some people who are agriculturists?—They are few. In Kollegal the weavers are the sericulturists. The idea is to make sericulture a subsidiary industry.

14149. You say the rearers are gradually becoming convinced of the superior quality of the tested seed. Who tests the seed?—They can test it themselves. There is a microscope provided and they can be taught to use the microscope. If under the microscope they find that the moths are free from the disease the presumption is that the eggs of the moth are free from disease. They can have a microscope costing Rs. 300, and if individually they cannot buy a microscope a number of ryots can join together and buy one.

14150. Have you any agency for doing this?—We have an agency at Coonoor. The Silk Superintendent tours about with a microscope and instructs the sericulturists in its use.

14151. You do not mention anything about spinning and weaving. Are there no spinning and weaving centres in this Presidency?—Yes. We have five peripatetic parties going about instructing weavers in improved methods.

14152. But in recent years you have reduced the number of peripatetic weaving parties?—Yes, because we think we have done enough; tney have learnt all the improved methods, and no propaganda work is necessary there.

14153. That is the reason why you have reduced the number of peripatetic weaving parties?—Yes.

14154. Have you any lac industry in this Province?—I have not investigated it at all.

14155. *Mr. Calvert:* On page 446 of your note you say, "The chief obstacle to the extension of irrigation by wells in this Presidency is the poverty of the ryot." Is it not rather the smallness of his holding?—That means poverty. The smallness of the holding is an indication of his poverty.

14156. His holding may be too small to make it worth while to dig a well?—Not necessarily; I do not think so.

14157. Do you think that fragmentation is an obstacle at all?—I do not think so; I do not think it has any relation to fragmentation of holdings.

14158. On page 447 you mention that there are 215 rice mills in the Tanjore district. Who owns those mills?—Mostly cultivators.

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14159. Do the cultivators get subsidiary occupations in those mills?—It is only in those places where there is a local demand for rice that rice milling can be run as a subsidiary industry; otherwise it must be a factory industry.

14160. Are the workers in those mills, cultivators or are they of the menial classes?—They are not cultivators; they are of the ordinary cooly class.

14161. In 1920 this Pumping and Boring Department was transferred from the Agricultural to the Industrial Department?—Yes.

14162. Could you give us a copy of those orders?—I will furnish you with a copy.

14163. Your Industrial Engineer has written a report full of valuable interesting information on boring. Could you give us a copy of that?—Yes.

14164. What training has your Silk Superintendent had?—The Silk Superintendent is the subordinate of the Sericultural Assistant, who is the Sericultural Expert. The Sericultural Assistant had training in Japan, but the Sericulturist you talk about is a man who had training under this Sericultural Assistant; he originally belonged to the Agricultural Department.

14165. Is your Sericultural Assistant a trained entomologist?—No; he is not a trained entomologist.

14166. Is the reeling of cocoons done by the rearers or by a different class of people?—It is done by the rearers.

14167. The rearers do their own reeling?—Not in all cases; in most cases they do it.

14168. May I know the date of the State Aid to Industries Act?—1923.

14169. After the Reforms?—Yes.

14170. Is security an obstacle in the way of taking loans?—It is, in regard to subsidiary industries.

14171. You refer to the Kallakkurichi Co-operative Society for the milling of rice and the decortication of ground-nuts; who are the workers in the mills? Are they cultivators?—They are cultivators mostly.

14172. *Mr. Kamat:* About this State Aid to Industries Act, are there any industries of standing which you think you have successfully helped to establish here?—As regards payments under the State Aid to Industries Act, the largest amount of loan which we gave was to the Carnatic Paper Mills.

14173. Has that mill come into existence?—The mill is there, but it is not operating on account of financial difficulties. In spite of the aid given by the Government, there are some financial difficulties. The shareholders are squabbling among themselves and money is not forthcoming for working capital. Recently I had been to the mills and I considered the ways and means of finding the required capital, but until the shareholders come to an agreement I do not think it is possible to set the mill working.

14174. So this solitary case of this venture of giving Rs. 4¼ lakhs has not been a success?—We cannot say it has not been a success; it has not been a success so far, but it is possible that the extra money might be forthcoming. The machinery is there, everything is there, only the working capital is wanting.

14175. Is it not the case that the Tariff Board have considered this special paper scheme and have recommended that this mill should be started?—Yes, they did.

14176. How long, do you think, this special officer whom you have put on to investigate spare-time industries will take to make a report?—We have not received orders from Government sanctioning the appointment of the special officer, but I have addressed Government.

14177. You have only addressed Government?—Yes, it will take sometime to get sanction.

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14178. And how long will it take for the investigation afterwards?—About six months.

14179. It will take more than a year before we know what spare-time occupations are feasible?—Yes.

14180. Have you got any officer, corresponding to the Agricultural Engineer, who investigates the need of adapting agricultural implements to suit your conditions?—There is the Industrial Engineer.

14181. The Mechanical Engineer is also the Agricultural Engineer?—We have nothing to do with agricultural implements; there must be an Agricultural Engineer for that.

14182. *The Chairman:* Who does the agricultural implements on the engineering side; who is responsible for that?—The Director of Agriculture.

14183. *Mr. Kamat:* The Director of Agriculture is responsible for agricultural engineering?—For agricultural implements.

14184. You have no special Agricultural Engineer to devise or to make new designs or adaptations in present designs of agricultural implements, such as ploughs, sugarcane mills, or anything of that sort?—No.

14185. You have also no indigenous firm manufacturing agricultural implements?—I do not know of any.

14186. There are only small local dealers?—Yes.

14187. About this decorticator, you told us that a few of the Kirloskar type had come into this Presidency?—Yes, a few of them, that is what my Engineer told me.

14188. Are you sure that some are imported from the Bombay Presidency into your Presidency?—I believe some are imported from Dandekar Bros. also.

14189. Do they solve the difficulty which you describe about ground-nut and the export of ground-nut to Marseilles in a bad condition?—Those machines do not solve the difficulty.

14190. That type does not solve your difficulty?—No.

14191. It means you must have an Agricultural Engineer, perhaps, who can design the necessary type of decorticator?—It is the Industrial Engineer's work; in fact, I have asked the Industrial Engineer to devise some sort of machinery for it by means of oscillating sieves for the mechanical grading of the ground-nuts.

14192. *Rao Bahadur Muniswami Nayudu:* Will you tell us the percentage of successful borings to the total number of borings made?—From 60 per cent. to 66 per cent. are successful; the rest are failures.

14193. In the case of borings you make the fees payable in advance?—Yes, always.

14194. And in cases where the borings are unsuccessful you do not remit the fees?—No, we do not.

14195. To that extent the ryot is put to a loss?—Yes.

14196. Have you any suggestions to make to enable ryots to take the risk in boring operations without much loss ultimately if the borings should prove unsuccessful?—The obvious reply is to refund the fees.

14197. Did you consider that aspect of it and make recommendations to Government?—I have said that I am considering the question of the reduction of fees; it is one part of it.

14198. You have made representations to Government?—I have not yet done so, but we propose to do it.

14199. You said that concession rates are given for services rendered to co-operative societies?—Yes.

14200. And you say that half the usual rates are charged?—Yes.

14201. Have there been applications from co-operative societies for your department's services?—Yes, several.

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14202. With regard to digging of wells or deepening of wells for drinking water-supply, have there been any applications to your department for boring operations?—Several, but we do not take it up, because we are not concerned with the drinking water-supply; we are only concerned with the supply of water for irrigation purposes.

14203. Your department, therefore, does not entertain any applications for boring operations with regard to drinking water-supplies?—Not, unless we have got some boring set disengaged, and not working, which never happens.

14204. There is no other department to take up that work?—I think, it is properly the work of the Sanitary Department, the Sanitary Engineer to Government; whether he takes it up or not I cannot say.

14205. *Sir Ganga Ram:* You know that the fish-canning industry here is for sale, and it is going cheap?—That is the concern of the Director of Fisheries.

14206. You have a fish-canning industry for sale; you have advertised it in the *Madras Mail.* I also asked them privately about it. Cannot you induce anybody to take it up?—I would suggest that you ask the official concerned.

14207. It is an industry?—The fish-canning industry is not under the Director of Industries.

(The witness withdrew.)

APPENDIX I.

Government Fruit Preserving Institute, Coonoor.

Year.	Capital.	Cost of production per lb.	Average selling price per lb.	Annual. output.	Loss.
	Rs. A. P.	Annas.	Annas.	lbs.	Rs. A. P.
Period from 16th September 1921 to 31st March 1923	1,09,048 13 7	*	*	15,728¼	16,414 14 8
1923-24	1,37,335 7 10	31·63	10·63	19,052⅜	23,153 8 5
1924-25	1,54,536 15 6	17·87	8·52	38,276	30,605 10 9
1925-26	1,58,339 14 10	52·38	7·98	6,441	26,585 2 8

* The auditors had not gone into the question of costing at the time of submission of this audit report.

APPENDIX II.

Silk trade in the Madras Presidency.

Articles.		Quantity.			Value.		
		1922-23.	1923-24.	1924-25.	1922-23.	1923-24.	1924-25.
					Rs.	Rs.	Rs.
Imports—							
Raw silk	lbs.	345,550	278,452	364,773	37,27,767	28,40,581	32,68,199
Waste	...	...	...	...	...	...	...
Silk yarns, noils and warps	lbs.	28	4,711	1,559	478	44,737	15,787
Silk Manufactures—							
(*a*) Goods of silk mixed into other materials	yds.	4,427	2,762	83	7,860	5,796	133
(*b*) Piecegoods	„	29,754	27,599	23,635	82,758	1,03,479	68,067
(*c*) Thread for sewing	lbs.	10	32	110	623	976	2,600
(*d*) Other sorts	„	2,896	1,964	2,042	72,426	50,446	45,356

Exports—							
(*a*) Raw silk	lbs.	60	1,120	480	112	1,200	9,000
(*b*) Chasm or waste	,,	310,050	395,190	570,760	2,27,739	3,06,393	4,78,021
(*c*) Cocoons	,,	17,776	30,745	31,000	20,324	53,745	43,597
Total raw silk .	,,	310,110	427,055	602,240	2,27,851	3,61,338	5,30,618
Manufactures—							
(*a*) Goods of silk mixed into other materials	yds.	7,849	6,665	89,916	13,816	9,667	69,441
(*b*) Piecegoods	,,	2,437	4,359	2,556	8,819	15,935	6,469
(*c*) Thread for sewing . . .	lbs.	...	2	...	...	10	...
(*d*) Other sorts	,,	34	250	380	61	3,226	366

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Memorandum on Rural Sanitation.

Under the terms of reference the Royal Commission on Agriculture is asked, among other things, to make recommendations for "the promotion of the welfare and prosperity of the rural population," and in particular to investigate "(*d*) the main factors affecting rural prosperity and the welfare of the agricultural population." The Government of India has asked Local Governments to call for memoranda from various departments which "when read together should afford a clear and co-ordinated picture of the general rural position in the Province and the measures which have been taken in the past and are now being taken to ameliorate it."

It is obvious that questions relating to the *health* of the rural population are amongst the most important which will come under review by the Royal Commission.

2. According to the census of 1921, the population of the Madras Presidency (excluding Indian States) was nearly 42·5 millions. Only 7 per cent. of this total resides in the 81 municipalities of the Province, so that 93 per cent. of the whole population lives in hamlets, villages, or rural towns and is mainly dependent on agriculture for its livelihood. The statistics of previous censuses show that little change in this proportion has occurred, and as industries are few in number and of little importance, it is unlikely that any violent fluctuations in the ratio will occur in the near future.

3. From the standpoint of the sanitarian, agricultural prosperity depends on a vigorous healthy people free from the ravages of preventible disease. The best indices of the health of a community are (i) the infantile mortality rate and (ii) the expectation of life at different ages. Figures illustrative of these indices, in the former case, in so far as they relate to this Presidency, and, in the latter, to the whole of India, are compared with corresponding figures for the few Western countries in the following tables:—

TABLE I.

Infantile mortality rates.

Deaths per 1,000 births registered.

Year.	Madras. Presidency.	England and Wales.
1916	182·8	91
1917	194·0	96
1918	232·2	97
1919	192·9	89
1920	161·3	80
1921	160·9	83
1922	166·4	77
1923	173·7	69
1924	179·2	75
1925	180·9	—

Owing to faulty registration, these figures almost certainly underestimate the true state of affairs in this Presidency, but even as they are, they indicate an enormous loss of human life. Moreover, the significance of infantile mortality rates lies in the fact that illness during childhood, "even when recovery occurs, is apt by its sequelae to impair efficiency or health" in later life. From this point of view, the table makes it clear that conditions obtaining amongst the rural population are prejudicial to prosperity.

TABLE II.

Expectation of life at certain ages.

—	At birth.	At 10 years of age	At 20 years of age	At 30 years of age
(a) Males.				
India	22·59	33·36	27·46	22·45
Germany	47·41	52·08	43·43	35·29
England	51·50	53·08	44·21	35·81
Scotland	50·10	51·86	43·27	35·17
Italy	46·97	52·55	44·20	36·73
(b) Females.				
India	23·31	33·74	27·96	22·99
Germany	50·68	53·99	45·35	37·30
England	55·35	55·91	47·10	38·54
Scotland	53·18	53·83	45·35	37·22
Italy	47·79	52·76	41·67	37·33

From these two statements, it will be seen that an Indian's expectation of life at birth is less than half the average figure for the peoples of Western countries. The tables also illustrate the remark already made that illness during childhood impairs health at later ages. The terrible loss of life in the adult age-periods, which are ordinarily those of maximum production, must be a very serious handicap to agricultural development.

4. As regards preventible disease, the subjoined statement shows the mortality in this Presidency during the last ten years:—

TABLE III.

Deaths from	1916-1925.*
Fevers	2,729,773
Cholera	286,091
Dysentery and diarrhœa	557,562
Small-pox	197,754
Plague	91,192

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Appalling as these figures are, it must be remembered that, in addition, approximately 45 per cent. of all deaths are registered under the heading "all other causes"; and in this mass of unclassified deaths which totals nearly 500,000 per annum, many cases of preventible disease find obscure burial. Judging from the figures for cholera and dysentery, the death rate from typhoid fever cannot be insignificant. Indeed, recent enquiries would indicate that in many rural areas, enteric fevers are endemic and exist in widespread fashion. A large proportion of the "fevers" death is certainly due to malaria.

5. The work done in the Madras Presidency during the last six years by the Ankylostomiasis Bureau, officered by the International Health Board, has shown that in the wet districts especially, where rice cultivation is the main occupation, from 80—100 per cent. of the people are heavily infected with hookworm. This human parasite slowly and insidiously undermines the physique of the population, predisposes to other diseases, and reduces productive capacity to a very high degree. Fortunately, these facts have been recognised by the owners and managers of tea and coffee plantations, although in other rural areas land owners and employers of labour have not yet realised the importance of this infective agent.

6. The large annually recurring mortality from water-borne diseases, such as cholera, dysentery and diarrhœa requires further mention. In those municipal areas which are fortunate enough to be provided with protected water-supplies, outbreaks of cholera seldom if ever occur, and this fact gives the clue to the prevention of those devastating periodic epidemics of which the Madras Presidency has had long and bitter experience. The high incidence of dysentery and diarrhœa can be ascribed chiefly to the low standard of general sanitation, and until the rural population develops a sanitary conscience and raises the prevailing low sanitary standard, it is very improbable that any improvement in the sickness and death rates for these dirt diseases will take place. Conservancy arrangements in most rural communities are entirely absent, and, even where they do exist, are of an extremely primitive nature. The banks of rivers and tanks are the favourite resorts for purposes of nature, and, as a result, not only are the only available water-supplies grossly infected, but soil pollution exists everywhere. It is curious that this should be tolerated in a predominantly Hindu population, whose religious teachers have centuries ago laid down strict injunctions prohibiting such insanitary practices.

7. Small-pox is another infection which yearly causes thousands of deaths. The high incidence of this easily preventible disease is chiefly due to ignorance and superstition. Many cases are wilfully concealed and deaths from small-pox are registered under "fevers" and "other causes" in order that village officers and the families concerned may avoid the "troublesome" visits of public health officers and vaccinators. As a result, outbreaks which could have been easily stamped out, if early notification to the Public Health Department had been made, are only discovered when the infection has become so widespread that it can be no longer concealed. So long as superstitous fear of the wrath of the goddess *Mariamma* controls action, so long will like difficulties be experienced.

8. It has been estimated that in this Presidency as many as 17·5 maternal deaths occur per 1,000 births, as compared with the corresponding figure of 4·0 maternal deaths per 1,000 births in England. Thousands of women are therefore needlessly sacrificed year after year because skilled medical attendance is not available and because the custom is to depend on the barbarous services of the barber-midwife or *dai*, who, steeped in superstition, carries on her profession without let or hindrance and in complete disregard of the simplest precautions against sepsis.

9. The problem of malaria is one which is of vital importance to a large proportion of the rural inhabitants of the Presidency. The malarial parasite is probably the correct cause of death in a very large number of the deaths registered under "fevers." In a number of districts, the malaria death rate

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is very high, and the amount of chronic invalidism produced by the malarial parasite must diminish to an enormous extent the potential productive capacity of the rural population. Notwithstanding the tremendous moral and physical deterioration known to be produced by this infection, however, no preventive measures on a scale commensurate with the economic importance of the disease have so far been attempted. Malarial surveys have been made in a somewhat spasmodic fashion since 1910 in small areas which were especially brought to notice, and during the last three years, the epidemiological units maintained at the King Institute, Guindy, have carried out a fair number of small surveys at the request of various departments of Government, such as the Forest Department, Public Works Department, etc. These surveys have indicated the great necessity for preventive work, and the appointment of a malariologist, who would work in with the Government of India scheme for an All-India anti-malarial organisation, is under consideration. There can be no doubt that malaria causes enormous havoc among the cultivators in large areas of the Presidency, and the control of this disease is one of the most urgent problems for which available funds should be allotted.

The distribution of quinine is also very desirable, and in the absence of definite anti-malarial schemes, the use of this drug should be widely encouraged. Quinine, however, is practically a Dutch monopoly, and for some years has commanded an exorbitant price in the open market, so that its issue, free of cost or at a price within the means of the people, is largely a question of finance.

10. Finally, mention must be made of the great increase, which has occurred during the last 10—20 years, in the incidence of tuberculosis, and especially of that form known as phthisis, although few accurate figures are available. Here, again, ignorance of the simplest rules of hygienic living and of the causes and mode of spread of the disease is largely responsible. Overcrowding of large families in badly-constructed and ill-ventilated houses is only too common, and the rigid exclusion of "night-air" increases the chances of infection.

11. These paragraphs will perhaps be sufficient indication of the problems which lie before the Public Health Department of this Presidency in its fight against disease. It now remains to describe "the measures which have been taken in the past and are now being taken to ameliorate" these conditions.

12. Prior to the introduction of the District Health Scheme in 1922 and 1923, no co-ordinated system of Public Health administration existed in this Presidency. The executive head of the Public Health Department consisted of a Director of Public Health with one Assistant Director up to 1918, and subsequently three assistants with territorial jurisdictions. The Government maintained eight itinerating cholera parties—each consisting of an Assistant Surgeon and ten trained Sanitary Inspectors—to deal with cholera epidemics in rural areas. One hundred and nine additional trained Sanitary Inspectors, called Deputy Inspectors of Vaccination, supervised the work of rural vaccinators and did their best to control outbreaks of small-pox. In districts exposed to plague, Collectors employed temporary staffs of Plague Inspectors, these being paid partly from provincial funds and partly from the funds of the local boards. Under the Local Boards Act (1920), all local bodies are compelled to maintain a staff of vaccinators, and a few Boards voluntarily employed Sanitary Inspectors for general sanitation work. The wastage involved in the maintenance of a separate trained staff for each epidemic disease was enormous, and, moreover, there was no authority in the district to coordinate the work of the various sanitary staffs employed. The Collector was responsible for plague, the cholera parties were sent out by the Director of Public Health, whilst vaccinators were under the control of the local bodies, and the work of the Deputy Inspectors of Vaccination could be inspected only about once every two or three years by the Director of Public Health or his assistants. The District Medical and Sanitary Officer was the recognised adviser to local bodies in public health questions, but this officer could devote only a very small part of his time to sanitary work.

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13. With the introduction of the Health Scheme in every district in 1923, the position completely changed. The three Assistant Directors of Public Health were each placed in charge of a bureau in the office of the Director of Public Health, and territorial jurisdiction was abolished. A trained Health Officer was appointed to each district to be in complete charge of the Public Health administration, and, in each taluk, at least one Health Inspector works under the immediate supervision and control of the District Health Officer. The work of the vaccinators employed by local bodies is regularly supervised by both Health Officer and Health Inspector, as these officers are obliged to tour at least 20 days every month.

The duties of the Health staff may be summarised as follows:—

(1) Investigation and control of all outbreaks of communicable disease in rural areas.

(2) Supervision of vaccination and all preventive measures, hitherto attended to by special staffs.

(3) Supervision and improvement of the registration of vital statistics.

(4) Drafting of plans and estimates for simple sanitary projects and taking steps to remedy defects in village drainage and water supplies.

(5) Systematic health propaganda work by means of lantern lectures, cinema lectures and demonstrations.

(6) In the event of outbreaks of cholera, plague or malaria, the disinfection of water-supplies, etc., treatment of early cases, rat destruction and plague inoculation, mosquito reduction and the distribution of quinine.

(7) The investigation of hookworm infestation and other similar parasitic infections.

(8) Co-operation with the district health staffs of neighbouring districts and States on receipt of information of the outbreak of infectious disease there, and, in the event of the appearance of infectious disease of a serious nature, the localisation of the disease with the aid, when necessary, of the staff of the adjoining districts.

14. The District Health Scheme is now complete, 24 District Health Officers and 248 Health Inspectors being employed These are all Government servants, their services being placed at the disposal of local bodies to carry out the provisions of the Local Boards Act (1920), dealing with the health, safety and convenience of the rural population. A great deal of opposition was at first raised to the new scheme, but the work of the last three years has proved its worth, and the almost universal cry at present is for extensions to its activities. Even with 32 additional Health Inspectors sanctioned durng the present year, many of the Inspectors' ranges are unwieldy, either in extent or in population, and when epidemics, such as cholera, break out, large temporary additions to the preventive staff are necessary. Under the Local Boards Act the expenditure incurred for epidemic prevention and on account of improvements in rural sanitation must be borne by the local bodies themselves. In many cases, warnings regarding approaching epidemics are ignored until the infection has become widespread, and as an excuse for refusing to carry out even the simplest recommendations made by the Health staffs, the plea of "lack of funds" is constantly employed. At the same time, slow progress is being made, but attention is in this connection invited to the accompanying "Memorandum on the Future Developments of the Public Health Service" which was prepared a few months ago. This memorandum explains in detail some of the difficulties experienced and it seems unnecessary to reiterate here what is already in printed form.

15. Since the reorganisation of the Public Health Department three years ago, the investigation and control of epidemic disease has naturally received most attention.

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Although the anticipated periodic outburst of cholera in 1924 and 1925 caused nearly 96,000 deaths, it is safe to say that at least as many more were successfully prevented, especially when it is remembered that during the previous epidemic wave of 1918 over 128,000 persons perished from cholera in that year alone. Moreover, the new organisation has been able to effect successful sanitary control of the large number of fairs and festivals which are held all over the Presidency. In a few centres, although some cases of cholera have occurred, the prompt measures taken by the District Health staffs have been sufficient to prevent any spread of the disease such as frequently occurred prior to 1922.

In the Government Budget for 1925-26, a sum of Rs. 6½ lakhs was provided for the improvement of rural water-supplies and village roads. The unspent balance of this sum was reallocated to the districts in the budget for 1926-27.

16. During 1922 and 1923, the Madras Presidency for the first time experienced an epidemic of relapsing fever, which threatened to decimate the village populations of several districts. So successfully was the preventive campaign carried through that by the end of 1923 the infection had entirely disappeared and the few minor outbreaks which have appeared since have been speedily stamped out.

17. The progress of vaccination has been very marked, owing to the better system of supervisory control and the great improvement effected by the King Institute in the manufacture of vaccine lymph. In 1924, over 2,000,000 persons were successfully vaccinated, and the figure for 1925, which is not yet available, is also estimated to reach this figure. The success rate which had fallen to about 60 per cent. in 1921 has during the last two years been between 95 and 99 per cent. The effect of the increased degree of protection to the community will be evident only in future years, but it does not seem to be too optimistic to state that, if similar work is done during the next ten years, small-pox epidemics will cease to be a danger to the people of this Presidency.

18. The new District Health staffs have been constantly urged to effect improvement in the registration of births and deaths, and the fact that the average registered birth-rate has increased by 7·9 per mille of population in the last five years is evidence that the vital statistics of this Province are now much more reliable than they have ever been. It is universally recognised that the basis of all Public Health activities rests on accurate registration of vital occurrences, but, although much has been accomplished, a great deal still remains to be done in this direction.

19. The inception of organised measures for the spread of knowledge in matters relating to public health really dates from the inauguration of the District Health Scheme in 1923. Since then the education of the public in health matters has received ever-increasing attention. Health propaganda work is one of the routine duties of the health staffs and is regularly conducted in the villages visited by them. The methods employed include not only formal lectures, lantern demonstrations and lessons in the village schools, but also informal and friendly talks with the villagers. In many places the local newspapers have been made the medium for the spread of information, and large numbers of informatory articles and paragraphs have been published. The attention of the public has also been sought through the medium of health dramas, many of these being remarkably well presented.

20. A perusal of the annual reports submitted by Health Officers, and those dealing with the National Health and Baby Week celebrations, indicates the far-reaching degree to which health propaganda measures are now being carried out all over the Presidency. It has been suggested that funds spent on this branch of public health work is money wasted. To this criticism, it is sufficient to point out that public health is dependent upon personal hygiene and the day-by-day individual practice of the principles of preventive medicine, and that, moreover, if general education is an affair of the State, so much the more is education in matters of health.

21. During 1925, 52,100 lectures were delivered in 36,800 centres, the total audiences numbering approximately 2,900,000. Of the lectures, 3,200 were

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illustrated by means of lantern slides. Displays of picture posters and the distribution of illustrated leaflets made the lectures more impressive and attractive.

From the report of the Madras Health Council for 1925-26, it is learned that 90,000 posters referring to eight subjects and 3,000,000 leaflets dealing with twelve different subjects were issued; 2,786 new lantern slides were prepared and issued on loan; and 2,500 slides were prepared for local bodies. Fifteen lanterns were in constant circulation on loan, while eighteen lanterns were supplied to local bodies during the year. Seventy-seven miniature health exhibitions were also held on the occasions of large fairs and festivals. The value of pictorial exhibits as a means of education is being more and more appreciated, and much more could be done if every Health Inspector was supplied with a lantern and slides. This ideal is being constantly brought to the notice of local bodies.

22. The medical inspection of school children is a subject which has been discussed for several years past. Only recently has Government ordered the compulsory inspection of all pupils attending secondary schools, but it would be to the great advantage of the whole Presidency if this order were extended to all primary schools, as the medical inspections concerned would draw attention to many disabilities, and would also be an object lesson to the children in connection with maintenance of health.

23. Probably, the greatest lasting good can be effected by teaching the youth of the country, and in as many as 3,500 schools, lectures, dialogues and dramas were given. In many places health lectures were arranged as part of the programme at Teachers' Associations meetings.

The following table gives comparative figures for 1924 and 1925:—

Year.	Number of lectures given.	Number of lantern shows.	Approximate audience.	Activities in schools.	Exhibitions at fairs and festivals.
			Districts.		
1924 . . .	33,840	840	1,354,000	1,261	51
1925 . . .	52,073	3,260	2,874,000	3,521	77
			Municipalities.		
1924 . . .	1,553	222	36,700	41	...
1925 . . .	2,691	792	231,770	360	...

These sufficiently illustrate the additional amount of propaganda work carried out in municipal and rural areas during the past two years, and from the reports made by District Health Officers it is evident that it has already borne fruit, *e.g.*, in demands for vaccination, protective inoculation, etc.

24. Propaganda work, under the *ægis* of the Madras Health Council, has grown to such an extent, and the work has become so heavy and complicated, that the time has come when local bodies may legitimately be asked to acknowledge their indebtedness for the success of their health week celebrations by making grants to the Health Council. In this way, sufficient funds would be made available for the employment of suitable photographers, artists

and appliances, making it possible to produce new and up-to-date literature, posters and slides. Local bodies make heavy demands for supplies of propaganda materials, and it seems only reasonable that they should assist with money for the production of that material. Two alternatives remain; either a large curtailment in the activities of the Health Council in order that its budget allotments may not be exceeded, or the appointment of a separate officer in the office of the Director of Public Health to deal with the whole work now done by the Madras Health Council and the Health Propaganda Board.

25. The inauguration of the "National Health and Baby Week" movement in this Presidency has brought the activities of the Public Health Department and the principles of hygiene and well-being to the notice of the rural population even in the most remote tracts. The Health Week has now been conducted during each of the last three years. All local bodies are advised to organise committees and, in particular, to enlist the co-operation and assistance of as many ladies as possible. A model programme for the week was drawn up by the Director of Public Health and circulated to all local bodies for their guidance. Funds amounting to over Rs. 86,000 were raised by public subscription, and, generally speaking, an increasing readiness to contribute towards the expenses of the "Week" has become apparent, so that the total expenditure for the Presidency must have amounted to considerably more than a lakh of rupees. The interest aroused by these celebrations has been immense and that they are appreciated is evident from the ever-increasing support given to the movement by the public. "Health and Baby Week" has, in fact, appealed to the general populace in a way which has not been equalled by any other movement. All District and Municipal Health Officers have been reminded that the enthusiasm roused during the Health Week should not be allowed to wane, but that vigorous propaganda work should be continued throughout the year, if the best results are to be obtained. Efforts are constantly being made to get local bodies to provide their Health Inspectors with magic lanterns and slides. Many have complied with this demand, but many more have made no response, and the lanterns and slides available with the Madras Health Council are constantly out on loan, and it has been impossible for the Health Council to comply with anything like the demands made on it for its lanterns, slides, literature, posters and leaflets. An endeavour is now being made to obtain pecuniary aid from Local Boards for the further development of the Madras Health Council's work. The response has been fair, but it must be recognised that the preparation of propaganda materials requires liberal grants, and the sum of Rs. 8,000 given by Government goes a very little way to prepare even the literature and posters in half a dozen different vernaculars in sufficient quantities to meet the needs of 43 millions of people. Although, therefore, it may be confidently asserted that a very promising beginning has been made with the health propaganda campaign, it will not be possible to make any rapid advance until additional funds are available. It may here be mentioned that the Ankylostomiasis Campaign of the International Health Board has contributed largely to this work and has done a great deal to awaken the masses to a realisation of the need for healthier and more sanitary surroundings.

26. The type of education in vogue in this Presidency is more or less of an academical nature and the scope of technical education is very limited. If the educated people of the present day would return to their villages and devote attention to agriculture, instead of wandering about the towns unemployed, they might apply their general knowledge to agricultural problems and help the uneducated ryot to improve his antiquated methods. In olden days, the village was practically a self-contained unit having institutions conducive to the promotion of every sphere of life. This system has almost entirely disappeared. The masses remain uneducated, there is very little co-operation and even less of the spirit of the helping hand, whilst poverty is extreme. The absentee landlord frequently visits his villages only to demand his rents and takes little interest in the health or welfare of his tenants. This attitude was demonstrated in remarkable fashion in Tanjore district in 1922, when

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relapsing fever swept over a large area. Many of the poor cultivators, who had passed successfully through attacks of the disease, died of starvation during the prolonged convalescence which is the normal sequel of this disease, because of their inability to earn money and because the *mirasidars* declined to advance either money or grain to their wretched dependants.

In villages where ignorance and poverty abound, it would be unreasonable to expect any decent standard of sanitation. Hence the absence of any conservancy arrangements and the universal contamination of tanks and wells with human filth.

27. The question of medical relief may receive brief mention. During the past year, a scheme of subsidising medical practitioners, on condition that they settle down in rural villages, has been introduced by the Madras Government, and although it is too soon to give any opinion regarding its ultimate success, there can be no doubt that, properly developed, it would be a great boon to many thousands of the people who are unable to spare the time to travel long distances to headquarter hospitals and dispensaries in order to obtain medical aid.

In connection with the subject of maternity relief, the Madras Legislative Council has recently passed a Nurses' and Midwives' Registration Bill, but it remains to be seen whether this measure will effect any improvement. Extended measures for maternity relief are urgently required, as witness the fact that for every 1,000 registered births in this Presidency during 1925 only 64 women received skilled attention during labour. During the past three to four years, the Madras Presidency Maternity Relief and Child Welfare Association has endeavoured to stimulate local bodies to take some interest in this question, and at the present time 58 such centres are actively at work. The great majority of these, however, are in the larger towns, and, so far, practically nothing in this direction has been done for the women who live in rural tracts. If material death rates and infant mortality rates are to be reduced, relief centres must be opened in hundreds instead of in units. Very little response has been obtained from local bodies to the momoranda on the subject issued by the Public Health Department, and one can only hope that the new interest in public health resulting from the repeated celebration of Health and Baby Week will eventually rouse the public to a realisation of the need for a far wider organisation in maternity relief and child welfare work. In only one district in the Presidency has a trained health visitor been employed, and this is all the more disappointing as her successful work has shown the great possibilities of this branch of public health activity.

28. In the average village in this Presidency, therefore, the conditions are altogether deplorable. Dwelling houses are badly constructed, devoid of light and ventilation. Verandas and eaves are used as cattle sheds, and cowdung and house refuse is accumulated in the close vicinity of the houses. In the few villages which have got more than one source of water-supply, no particular well or tank is reserved for the supply of drinking water, and pollution by washing, bathing, ablution by the indiscriminate use of every kind of water-pot, and by animal and human organic matter is universal. The lack of any kind of drain permits of the stagnation of sullage and washing water, and the formation of pools in every depression during the rainy weather increases the unhealthiness of the village-site. Cactus and prickly-pear are allowed to overgrow every vacant plot owing to the entire lack of the communal spirit, and these growths afford ample shelter for committal of nuisance, so that every corner becomes a latrine and soil pollution is ubiquitous. Not only does the average ryot fail to appreciate the loss to his land involved in the use of cowdung as fuel, but he is, with few exceptions, entirely opposed to the idea of utilising night-soil as a manure. As a consequence his fields become poverty-stricken, and he himself suffers from hookworm and other infections. An attempt has recently been made to constitute "model villages" in certain taluks on which any available Local Board funds may be spent on improvements. These are meant to set an example to others in the district, but it will be long before this effort bears fruit.

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29. Sanitation in the real sense of the term, therefore, simply does not exist in rural areas. Under the Local Boards Act, the subject is one which falls under the province of the local bodies themselves; but it is really as much the concern of Government. A definite programme of rural sanitation is required, if human health, human efficiency and human happiness is to be the peoples' lot. From the public health standpoint therefore agricultural prosperity depends on the following:—

(*i*) Improved and protected water-supplies.

(*ii*) The introduction of conservancy arrangements by which soil pollution may be reduced.

(*iii*) Improved housing conditions.

(*iv*) A wide extension of medical relief, particularly with reference to diseases like hookworm and malaria, where specific treatment can be given; medical inspection of school children.

(*v*) In relation to (*iv*), the expansion of a public health laboratory service is urgently necessary.

(*vi*) Education with special reference to the principles of hygiene and civic responsibility in relation to public health.

(*vii*) A wide campaign in health propaganda, special attention being devoted to school children.

(*viii*) Extended provision for maternity relief and child welfare.

Memorandum on the Future Developments of the Public Health Service.
(Submitted to the Government of Madras.)

1. Early in 1923, when the Government completed the scheme of placing a trained Health Officer in every district of the Presidency, an advance was made which, in most countries, and certainly in most Provinces of India, has not yet been accomplished. It has been very generally recognised that such a scheme is one of the essentials in building up a rural health service worthy of the name, as it is impossible for the chief executive of Government, *i.e.*, the Director of Public Health and his Assistants, whose duties should be entirely advisory and supervisory, to attend to the multifarious administrative and technical details that arise daily in each district.

During the last two years fortunately there has been no interference with the scheme, and generally speaking, the District Health Service has been allowed to consolidate its position and has proved of great use in many different directions. Indeed many of those who originally opposed its introduction have come to recognise its value and have asked for its extension.

2. A complete District Health Service, however, necessarily consists of more than a Health Officer and a few Health Inspectors, and the questions may be asked, "Is the full value of the District Health Service being obtained now?," and if not, "How can full value for the expenditure be obtained?" My reply to the first question is in the negative. This memorandum has been prepared in order to lay before Government a reasoned reply to the second.

3. It is obvious that the Office of Director of Public Health must be expanded sooner or later to accommodate a number of additional bureaus dealing with such subjects as (1) Tuberculosis, (2) Venereal Diseases, (3) Malaria, (4) Medical Inspection of schools and school children, (5) Medical Entomology, (6) Health Propaganda, (7) Rural Sanitation and (8) Child Welfare and Maternity Relief; with possible further extensions in connection with Industrial Hygiène, Port Hygiene, and Food Control. It is not expected, nor would it be reasonable to expect, that all these expansions will be carried out even within the next few years, but nevertheless they must be kept in view if the ideal scheme is eventually to be evolved.

4. It is not possible for an officer, however well trained, to go into a district and accomplish definite results without first having definite plans and the

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organisation through which the necessary measures for the improvement and protection of the public health may be conducted in logical sequence and in proper relation one to the other. Public Health matters cannot be dealt with properly by attacking one phase of the problem without considering the possible relation it may have to the problem as a whole, and the sooner it is generally recognised that no special line of health work is complete within itself, that the whole problem of health and disease is so inter-related and complex that it is impossible to make satisfactory progress along one line unless it is conducted in a definite relation with all others, the sooner will waste of time, effort and money be avoided.

5. To illustrate this general thesis, it may be remarked that, since its introduction, most of the time and energies of the District Health Service have been devoted to the control of epidemics, for example, cholera, plague, small-pox and relapsing fever. Obviously the more logical process should be the prevention of such diseases, and it is along that line that the future general development of the Public Health Department must be made. Isolated efforts conducted with no definite object in view except, say, the prevention of further cholera deaths in an infected village, will result in little that is of permanent value. As long as the general health of the public is constantly menaced, as a result of complete lack of conservancy or even of improper conservancy, and as long as water-supplies remain impure, it is mere "building on sand" to attempt general improvement in public health. What is wanted is not only a definite programme for general rural sanitation, but a clear indication of the part to be played respectively by Government and by local bodies. That Government has definite obligations to meet in the development and maintenance of Local Health Services, there can be no question. It is the duty of Government, for instance, to contribute towards the salary of the District Health Officer an amount sufficient to compensate for such services as he is required to perform for the Government Public Health Department. Government should also contribute towards the support of local health measures the proportionate share which the State owes the district for its work in the prevention of the inter-district spread of disease. The former obligation has been recognised in that Government now pay 75 per cent. of the salaries of all Health Officers. Were Government to admit its responsibility as regards the latter, there is no doubt but that much more could be done in connection with the control of epidemic disease.

6. It is probably correct to say that nothing in the Presidency is more urgently required than safe and adequate rural water-supplies. Only then can diseases like cholera and the dysenteries and diarrhœas be tackled in real earnest. The Public Health Department has during recent years devoted considerable time and thought to the investigation of foci of infection as regards water-borne disease, and the information now available would be of immense use, if Government and local bodies could set apart, year by year, definite sums for the improvement and protection of water-supplies at these foci and along the usual known routes of spread of infection. The question is not of parochial interest; it is, on the other hand, one which intimately affects the whole Presidency. For example, the provision of good drinking water at such centres as Palni and Tadpatri municipalities ought to be dealt with from the Presidency point of view, and the schemes liberally subsidised from Government funds, if indeed, the Government do not bear the whole cost. Moreover, all expenditure on rural water-supplies. especially when supplemented with Government grants such as have been made this year, should be controlled in the light of the knowledge at the disposal of the Public Health Department, so that the most urgent works from the point of view of water-borne disease may be taken up first. The improved water-supplies to be established, and the order in which they should be taken up, depend entirely upon local conditions, and can best be determined by the Public Health Department in consultation with the local District Health Officers.

7. During the last few years the International Health Board of the Rockfeller Foundation have, in this Presidency, conducted a campaign against

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hookworm, and, in addition to general surveys made in different districts, have carried on intensive propaganda in certain areas. The Government no doubt have supported this campaign with money grants, but there is a danger of the policy of the International Health Board being lost sight of. Their work is intended to educate the people among whom they labour to see the necessity of introducing a system of rural sanitation. It is with the hope that an impulse may be created among the peoples of this country towards the abolition of present insanitary conditions that the International Health Board stands ready to give assistance. The avowed purpose of that organisation, *viz.*, "The well-being of mankind throughout the world," can be initiated in no better way in places like India, where such a large proportion of the population is without any knowledge of hygiene, and where consequently there can be no sentiment in favour of preventive medicine, than through the medium of hookworm demonstrations. In the case of hookworm disease, the parasite, its life cycle, the process of infection and its effect on the individual can be easily demonstrated to the most ignorant individual, and, as enteric fever, cholera, dysentery and diarrhœa all result from the same insanitary practices, the teaching of the principle of hookworm infection teaches at the same time the principles involved in the prevention of all other diseases that arise as a result of improper disposal of human excreta. But all this is merely a means to an end. So far as Madras Presidency is concerned, the hookworm campaign has so far not resulted in any permanent improvement, because there has been no practical response to the repeated warnings as to the danger of soil pollution, and the necessity for the construction and proper use of suitable private and public latrines. This is not wholly the fault of local bodies, but whatever the cause, the time has now come for making a move, and it is suggested that the move ought to be initiated by Government setting aside a sum of money yearly for this purpose. In several instances District and Taluk Boards have already sanctioned varying amounts in their annual budgets for rural conservancy, so that the need for such expenditure is beginning to be recognised. Mr. Foulkes, President, District Board, Madura, before whom the suggested scheme has been laid, has agreed to provide Rs. 29,000,—provided Government give a grant of equal amount,—for the provision of suitable latrines in selected villages and unions in his district.

To start with, a small group of two to three districts might be selected, *e.g.*, Tanjore, Trichinopoly and Madura, and if the hookworm campaign were concentrated there, and Government assistance were given in the form of half grants, the advantages of a hygenic system of night-soil disposal and the benefits to health which accrue therefrom would be brought to the direct notice of the rural population. Not only would the districts concerned benefit but others would quickly see the advantages. In any case, something practical towards a general scheme of improved rural sanitation would be initiated, and the International Health Board would be encouraged to carry on in the Presidency and possibly expand their programme of work.

The scheme deals only with a very primitive health measure, but one must start with primitive measures in a population whose knowledge of public health is primitive. At the same time, although primitive, it is none the less fundamental in the construction of any public health scheme. Later on, larger schemes can be developed. Only too often has it been the tendency to start with the larger schemes and neglect the simpler measures,—a tendency which has frequently defeated the object in view.

It must be remembered, of course, that construction and *maintenance* of latrines means a permanent staff of some kind, but local bodies, if they were assisted in the construction expenditure, would probably be willing to face the expenditure on staff. The District Health Officers and their staff would also have here something tangible to work at, and the general effect on the whole department would be not only stimulating but lasting. The suggestion is also made that in many cases the villagers might be willing and able to build these latrines themselves, and where this was found impracticable, small

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local contractors could possibly be got to do the work cheaply. The Registrar-General of Panchayats would very probably be able to advise regarding the introduction of the scheme in areas where panchayats have been constituted. Further grants from Government would be necessary for further extensions of such a system. The point to be emphasised, however, is the early allotment of a grant in order that a start may be made during the present financial year.

8. Decentralisation was a popular topic amongst politicians in England in the second half of last century and the idea seems to have spread to this Presidency only in 1908 when a Decentralisation Committee made a report. The recommendations made by this Committee, however, with regard to vaccination, public health and sanitation were only embodied in the Local Boards Act of 1920 and by that time, it had been proved that decentralisation could be carried much too far. In 1872, the Public Health Act in England established as many as 1,857 local sanitary authorities, and experience in health administration and other forms of governance have proved the grave disadvantages of small units of Local Government and the trend has been to enlarge them. The following paragraph is taken from the Presidential Address given in July 1925 to the Sanitary Congress by Sir George Newman, K.C.B., Chief Medical Officer to the Ministry of Health:—

"The Poor Law Amendment Act of 1834 reduced the units of poor law administration from 16,500 to 660; the Education Act of 1902 reduced the unit of education administration from 2,469 school boards to 318 local education authorities; the new Rating and Valuation Bill would reduce the units of local rating from 12,882 to 648. These reductions unquestionably make for efficiency and economy. The next step, and of its urgency there is general agreement, is to reduce the 1,900 local health authorities in a similar drastic way, co-ordinating the duties of the smaller ones with those of the larger ones. We must not forget that the present scheme of local sanitary authorities (now 50 years old) has rendered great pioneer service and has given sanitation an invaluable local setting. But under modern conditions the disadvantages are overwhelming. *In the smaller bodies there is all too often incompetency, both of personnel and officers, combined with inadequacy of remuneration of the officers;* there is duplication of officers and institutions leading to extravagances, waste and confusion; local and personal considerations predominate, with the result that self-interest is cultivated, vested interest created, and public interest neglected; and *there is lack of uniformity and equality in the administration of Sanitary Law common to the whole State. Yet epidemic disease spreads through large communities rather than small and is not confined by parochial boundaries, e.g.*, it is impossible to grapple with small-pox or typhoid fever if one small area differs from another in the practice or neglect of essential methods. Water-supply, sewerage, river pollution, and hospital provision must also be dealt with on a general, and not a particular scale. It is true, of course, that these features are characteristic of some of the smaller authorities only, but these smaller authorities are upwards of 1,000 in number, and their disabilities are injuriously affecting the entire public health service of the nation.

9. These sentences might well be applied to taluk boards in this Presidency and are deliberately quoted as a strong argument in favour of removing the subjects of "Public Health and Sanitation" from taluk board control and bringing them once more under district boards. It has been found in practice that, with a district health officer under the president of the district board, with health inspectors distributed one to each taluk and vaccinators appointed and paid for by the taluk boards, effective control by the district health officer is practically impossible. The dual control in this branch is the main reason why greater improvement in vaccination work has not been forthcoming, and so long as this anomalous position continues, so long will district health officers be unable to obtain proper co-ordination of the work in the district. Moreover, practically every proposal made to these small local bodies by the Public Health Department is met with the reply that no funds are available, or that the board does not agree with the opinion of the Director

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of Public Health. If the change to district board control could be carried out, these difficulties would be greatly minimised, dual control would disappear and the district health officer could, without delay, concentrate the whole or part of his district staff in any particular area in an emergency. The difficulties raised by this proposal are not insurmountable. If an Act is found defective it can always be amended.

10. In the absence of a Public Health Act for India, the administration of public health labours under grave disabilities and it is high time that such an Act, embodying the Public Health Regulations now distributed through a number of minor Statutes, was added to the Laws in force in this country. In this connection it may be remarked that the sections in the present Local Self-Govrenment Acts dealing with public health give local bodies much too free a hand in questions which affect not only the area included within their own boundaries, but it may be the whole Presidency. The Public Health Department has purely advisory functions, but when its advice is rejected without reason, the department or the Government should have statutory powers to compel recalcitrant local bodies to take at least reasonable precautions against infectious disease. It ought to be possible to compel a local body to carry out measures, which on the advice of the Public Health Department, Government consider necessary for the safety and welfare of the community. Moreover all local bodies should be compelled by law to set aside yearly definite sums, or definite percentages of income for the development of public health measures. The budgets of district boards, municipalities, and of taluk boards (if their existence is to be continued) should show exactly what percentage of the total income is being set aside for those purposes. The Acts in force require amendment in those directions.

11. The writer, along with Mr. Gopalaswami Ayyangar, spent many weeks during 1922 in preparing a volume of model by-laws dealing with practically every public health section of the Local Self-Government Acts of 1920. He has yet to learn that these by-laws are being worked effectively or even that they have been adopted by more than a small minority of the local bodies of the Presidency. These by-laws were drawn up in accordance with present law, permission was granted to local bodies to modify them in accordance with local requirements, and, if they were applied properly, would be a tremendous lever in the hands of those anxious to improve local insanitary conditions. The fact is that they are more or less of a dead letter, and it is submitted that Government should compel local bodies to adopt a more active attitude in their application. Laws, rules, regulations and by-laws on *paper* are totally ineffective without a *vis a tergo* compelling their practical application. The Department of Public Health should be a strongly centralised powerful organisation*; the sanitary code upon which its authority rests, should be modern in every particular. This Code should be incorporated, as already suggested, in an up-to-date Public Health Act. With the advice of a Central Board of Health, nominated by the Government, the Director of Public Health should be empowered to promulgate new regulations, as they are deemed necessary, and should have authority to insist on all public health regulations being carried out by local bodies as strictly as is compatible with their financial position.

12. In no instance perhaps is there more "lack of uniformity and equality in the administration of sanitary law common to the State," than in connection with the control of small-pox. Government has already been addressed on several occasions regarding the difficulties experienced by the Public Health Department in connection with this disease owing to the fact that "one small area differs from another in the practice or neglect of essential methods."

13. The problem of Malaria in the Presidency has so far been practically untouched, although one or two district health officers have made interesting and useful reports on the subject. With the help of the Indian Research Fund Association, it is hoped to carry out during the next year a general

* *Vide* reply to question 14375 on page 508.

survey and to prepare maps showing the main danger zones. In various parts of the world reliance is placed upon quininisation for the control of malaria in endemic areas, and one or two district boards have made tentative efforts in this direction, but the whole question is an immense one and will require very considerable expenditure if effective progress is to be made in stamping out this disease. So far it has been possible to obtain sanction only for one Malaria Unit, attached to the King Institute. The inexpensive organisation has been in constant demand and further units urgently demand sanction. Moreover detailed investigations in every malarious area in the Presidency must be made in order to discover the types of malaria-carrying mosquitoes prevalent, because the different varieties of mosquito require different preventive measures. For this work the whole-time services of a trained Entomologist are necessary. There does not seem to be much doubt that malaria causes many deaths and a tremendous amount of sickness, and by devitalisation of the individual lays him open to attacks from other more insidious forms of disease such as tuberculosis.

14. Mention of this last disease leads one to ask if any worth-while results can be accomplished in the prevention of tuberculosis, unless in the first place conditions affecting the spread of all the communicable diseases which lower the vitality and render the individual an easy victim to the tubercle bacillus are controlled. Safe milk supplies must be assured. Satisfactory methods of sewage disposal must be installed. Infants must be properly reared in decent houses. Personal and school hygiene must be observed. Medical examination of school children must be made and defects and abnormalities corrected. In short, the control of tuberculosis is not a problem by itself. Rather is it a corollary to a large number of other Public Health problems, and will depend on all the varying activities which go to make up a well-balanced Public Health Department. It cannot be taken up, in any case, until public sentiment demands it, and the factors such as defective drainage, defective ventilation and defective conservancy, which ensure a continuance of tuberculosis infection, are first eliminated. This does not mean that the treatment of persons suffering from tuberculosis should not be encouraged. The present Memorandum does not deal with the individual, but rather with what Carr Saunders calls the "herd," by which he means the "mass" of the population.

15. In the same way the protection of the health of mothers and infants lies mainly in control of communicable diseases, the provision of decent houses, safe water and milk supplies, adequate methods of sewage disposal and a generally healthy environment. The money now being spent on Child Welfare Centres is perhaps useful as a method of education in the principles of hygiene; it *cannot* be considered as money well spent so long as the infants and their mothers continue to live in slums without water, without drainage, without fresh air, and often without sufficient nourishment.

16. This leads to another development of the Public Health Department which demands immediate extension. During the last few years more and more attention has been devoted to the education of the people in hygiene. "One thing is quite certain. We have reached a stage in the evolution of the Public Health when it is a necessity of further progress that we should create an enlightened opinion and carry it with us. This is necessary because there is a need of an 'impulse' behind sanitary legislation and effective administration of it, and secondly because the public health is dependent upon personal hygiene and the day by day individual practice of the principles of Preventive Medicine. We must do more ourselves."

17. There is no doubt that educational health work is one of the most effective and far-reaching forms of general education. If general education is an affair of the State, so much the more is education in matters of health, for the education of the people in the value of public health measures is the surest way to stimulate interest in this subject and to gain the financial support necessary to carry out modern sanitary measures. For three years past the Madras Health Council has been struggling along with a scanty

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budget (aided by the Red Cross Society) to do what it could in this direction, and it is surprising what has been done with the few thousands of rupees available. During the present year the Government sanctioned a recurring grant of Rs. 8,000 (Rs. 3,000 of which was earmarked especially for Health and Baby Week). It can be better imagined than described how far this sum will go in financing any adequate educational campaign for a population comprising nearly 43 millions of people and using at least half a dozen different tongues. It is now suggested that Government should establish as an integral part of the office of the Director of Public Health a Health Propaganda Section in charge of a suitably qualified officer, taking over if necessary all the property and material in the hands of the Madras Health Council and giving a liberal grant for a wide expansion of the work now being done by the Health Council. As a matter of fact, apart from the enthusiastic help received from the two Chairmen, Sir Alexander McDougall and Dewan Bahadur S. Bavanandam Pillai, and from Colonel Cunningham and some of his staff in the King Institute, the whole of the burden of work has fallen on the shoulders of members of the Public Health Department executive and they have given freely and willingly of their leisure hours to carry out what has been done. It is neither fair nor right that this all-important branch of Public Health work—one which is now universally recognised as a necessity in all Public Health Departments—should be carried out by means of voluntary workers. No doubt as Sir George Newman states in the address from which quotations have already been made—"it is the local authorities who should be mainly responsible for undertaking systematic educational health work suitable to the own districts, circumstances and needs," but *in the absence at present of proper recognition* of the importance of this work by either taluk boards or municipalities, it is the duty of the Government to give the lead. This had indeed been already recognised by more than one Provincial Government in India, and it is to be hoped that Madras—which has for so many years given the lead to the whole of India in matters sanitary—will not now fall behind. As the information afforded in this subject should be "appropriate, timely and correct," it seems best that the propaganda material used should be prepared under the direct supervision of those who are the expert advisers to Government on all Public Health questions. An additional point worth noting is that the material must be not only scientifically correct, but must be in such a form as to strike the imagination of those among whom it is intended to be used. The preparation of health propaganda is no simple task and the officer in charge requires particular qualifications which are not easy to define. Increased Government grants under this head are inevitable if the health propaganda campaign is to be effectively carierd on and effectively extended.

18. Finally, it has already been proposed to Government that changes and improvements in the teaching of Hygiene are urgently called for. It is not proposed to enlarge further on this subject here. But it will not be out of place to remark that the Calcutta School of Tropical Medicine should be made use of for the further training of members of the District Health Service. Many of the officers in the service are young and keen, and a course such as is given there would be a great stimulus and would moreover be far less costly than periods of study spent in England.

19. Judicious selection of the men best fitted for further study would have to be made, and these officers would then be capable of carrying out the local epidemiological and other enquiries which are so essential in connection with a number of diseases. It has been possible in a small way to stimulate a few of the present District Health Officers to efforts in this direction by personal visits and instructions, but this is hardly enough. A number of Health Officers should be specially trained, *e.g.*, in Vital Statistics, in Epidemiology, etc., so that they may be capable of carrying out special investigations in these and other subjects. If one was given a sound training in Entomology, for instance, he could take up the Entomological Surveys already referred to in the paragraphs dealing with the Malaria problem. It is understood that if Government adopted the above suggestion, the International Health Board

would be prepared to consider a 50—50 grant in aid of the training. Moreover it is also necessary to keep in mind that the International Health Board is willing to award yearly a number of scholarships in order to enable Health Officers in Government employ, or men guaranteed employment by Government on their return, to proceed to America or England to undergo a course of post-graduate study for one or more years. This is an opportunity for Indians which ought not to be lost, and it is proposed to put up the names of two or three young officers of the department in 1926—27 whom the Government might usefully recommend to the Government of India and the International Health Board for scholarships. The training thus obtained would be invaluable, not only to the individual officers themselves, but to the whole Public Health Department. If the Department is to make continued progress, it requires additional specialised workers, and these can best be obtained by recruitment from the present cadre of Health Officers. There are so many special problems awaiting investigation in the Presidency!

20. The fundamental need for the Presidency is not the development of numerous specialities to be introduced into local communities or groups independently but for the establishment of an efficient district health service through which the public health activities of the district may be conducted in logical sequence and with proper relation to each other. Until the advantage of a single definite programme of health-work between Government and the district is generally recognised, the isolated efforts which have so far been the common practice will result in little of permanent value. Some of the more keen of the District Health Officers have already recognised the limitations now imposed on them by circumstances, and have expressed regret that so little permanent good comes of the efforts they have made. This is an attitude which is not only deplorable but one which the Government and the executive head of the Public Health Department must try to correct and at all costs at the earliest opportunity. It seems that the last two years have been long enough to permit of the solidification of the foundations on which the new District Health Service was laid, and the time has now come for further building. If Government willingly or unwillingly postpone that further building, not only will the District Health Service become disheartened and stale, but local bodies will lack confidence in the department and continue to withhold support, and the general public will remain confused and sceptical.

21. It is hoped that what has been written above demonstrates with sufficient clearness some of the directions in which further development is possible and desirable. They cannot of course be all taken up at once, but for the convenience of Government the following brief summary has been prepared. Under "A" are included those schemes which should be taken up urgently and under "B" those which might reasonably be taken up as and when funds permit.

22. *Summary.*—A. (*i*) The scheme outlined in paragraph 7 in connection with Rural Sanitation is one which demands serious consideration and early sanction. It is probably the key to most of the other schemes.

A. ((*ii*) The suggestion made in paragraphs 5 and 6 for the provision of water-supplies in towns and villages known to be foci for the spread of cholera should be favourably considered by Government in so far as grants are available. Grants such as those made during the present year should be given only on the conditions laid down in these paragraphs.

A. (*iii*) Next in importance is the scheme described in paragraphs 18 and 19 for the training of selected Health Officers either at Calcutta or in America, or in England.

A. (*iv*) Almost equally important with the last is the provision of adequate funds for extension of the health propaganda work (paragraphs 16 and 17).

A. (*v*) The provision of a Public Health Act for India or for the Presidency (paragraphs 10 and 11) and the amendment of the present Local -Self Government Acts (paragraphs 8 and 9) are allied subjects of great importance.

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B.—Extensions outlined in paragraph 3 and the subjects briefly discussed in paragraphs 13, 14 and 15 are closely inter-related. In order, however, that the more important issues might not be lost sight of, no attempt has been made in the present memorandum to deal with those questions in any detail. When occasion arises, details will be provided.

[*The action proposed to be taken by the Government of Madras on this Memorandum is stated in G. O. No. 1035-P. H., dated 18th June 1926,* vide *Appendix.*]

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APPENDIX.

G. O. No. 1035, P.H., dated 18th June 1926.

The Government have read with interest the memorandum submitted by the Director of Public Health on 'the future development of the Public Health Department' and generally approve the views of the Director as expressed in the memorandum. The problem in regard to the expansion of the activities of the Public Health Department is however as with other departments one of finance and the Government wish it to be understood that their general approval of the Director's views do not in any way commit them to further financial obligations. Each proposal outlined by the Director in his memorandum when submitted in a detailed form will have to be subjected to a critical examination on its merits with due reference to the resources of the Presidency at the time, the other claims upon them, and the existing commitments of the Government.

2. In the concluding paragraph of the memorandum, the Director has given a brief summary of the subjects which he wishes to lay specifically before the Government. He divides these into two classes :—

A. Those to which he considers very early consideration should be given.

B. Those with which he has at present purposely made no attempt to deal in any detail in order that the more important issues should not be lost sight of in a mass of details of lesser importance. These proceedings therefore deal only with the points which the Director has included in Class A.

The Government propose to state briefly the action which they have already taken or propose to take to give effect to the Director's recommendations in regard to these.

3. (*i*) *Improvement of sanitation in villages by the construction of sanitary latrines—(paragraph 7 of the memorandum).*—The Director of the Ankylostomiasis Campaign has suggested that an intensive campaign should be carried on in a few districts to educate people in the use of sanitary latrines, latrines being provided in sufficient numbers to meet the needs of the population of the area selected. The point which he wishes to emphasise is that the curative work of his party is not an end in itself. He states that, unless conditions are radically altered, people who have been cured of the hookworm disease will soon become re-infected and no permanent improvement in the public health will result. He considers that the object of his work is not merely to cure individuals but to effect a permanent improvement in sanitation throughout the Presidency and this in his opinion can only be effected by inducing the people to adopt the habit of using sanitary latrines. Dr. Kendrick's proposal was placed before the Local and Municipal and Public Health Advisory Committees at a meeting held in December 1925. The members realised the desirability of making an attempt in the direction indicated by Dr. Kendrick, but at the same time recognised the immense difficulty of effecting a revolution in habits which have persisted for so long. The Committees considered that no beneficial results would accrue, unless the experiment was restricted in the first instance to a very small area and they were of opinion that the proper course was for the Director of Ankylostomiasis Campaign with the aid of the Director of Public Health, the President of a District Board and the Registrar General of Panchayats to try to persuade the people of one or two villages to adopt the latrine system, the scheme being worked by the panchayat or panchayats concerned and the District Board meeting the cost of the latrines and the sweepers. The Committees having recommended that the scheme should be tried in the Madura district, the President of the Madura District Board was requested to place the proposal before the District Board for consideration. The District Board has now agreed to give the scheme a trial and has allotted a sum of Rs. 20,000 for

the purpose. The area where the experiment should be tried has been selected and the District Board is making arrangements for the construction of latrines in the area.

4. (*ii*) *Provision of protected water-supply in places known to be foci of cholera—(paragraph 6 of the memorandum).*—The Government agree with the Director of Public Health that the provision of a protected water-supply in places such as Palni and Tadpatri which the investigations of the Public Health Department have shown to be the foci of cholera epidemics for all neighbouring districts is not a question of merely parochial interest but one affecting the health of large portions of the Presidency. As regards a water-supply scheme for Palni, the Government have therefore addressed the District Boards of Madura, Tanjore, Tinnevelly, Coimbatore, Ramnad, Trichinopoly and Malabar and have inquired whether they would be willing to contribute Rs. 10,000 each towards the capital cost of a water-supply scheme for the Municipality. They have also addressed a similar inquiry in regard to Tadpatri to the District Boards of Anantapur and the adjacent districts.

5. (*iii*) *Training of selected Health Officers in the Calcutta School of Tropical Medicine or in America or England.*—The Government have already accepted the proposal of the Director of Public Health that the Health Officers should be given a course of post-graduate training in the School of Tropical Medicine, Calcutta, and have provided funds in the Civil Budget Estimate for 1926-27 for the training of three officers. Certain medical officers have also been recommended by this Government for the award of the Rockfeller Foundation Scholarships this year, so that they may undergo specialised training in public health matters in America.

6. (*iv*) *Extension of health propaganda work—(paragraph 17 of the memorandum).*—The Director of Public Health is being requested to furnish the Government with detailed information to show the immediate and ultimate cost involved in his proposal to establish a Health Propaganda Section in his office.

7. (*v*) *Enactment of a Public Health Act for the Presidency—(paragraphs 10 and 11 of the memorandum).*—The question of the enactment of a Public Health Act for the Presidency and the amendment of the Local Self-Government Acts was placed before a joint meeting of the Local and Municipal and Public Health Advisory Committees held in February last. The joint meeting was in favour of the enactment of a Public Health Act and the consequent amendment of the Local Self-Government Acts, but they considered that if the enactment of such a measure threw any extra burden upon local bodies, they should receive the requisite financial assistance from the Government. The Government are not prepared to accept the commitment implied in the Committee's resolution, but at the same time will be glad to have the Director's detailed proposals for the drafting of an Act.

(By order of the Government, Ministry of Local Self-Government.)

Major A. J. H. Russell.

Replies to the Questionnaire.

Question 23.—General Education.—The time has now come when the subject of Hygiene should be included in the curriculum of all schools and colleges. The subject should not be optional but should be made compulsory. This question has been referred to in paragraph 20 on page 477 of the memorandum already submitted, where it has been pointed out that "if general education is an affair of the State, so much the more is education in matters of health." The old belief that Public Health deals only with "drains" and "bad smells" is not yet dead, and is even to-day one of the greatest stumbling blocks to all advance in its development. The Education Department should recognise that its efforts to educate will be largely frustrated, if those they desire to educate are devitalised by infection and so prone to sickness that they are frequently absent from school or college. School children ought to have laid before them the elements of the principles of healthy living and be compelled,—at least in school hours, to practise these principles. This implies that school and college teachers should themselves understand what is meant by Modern Hygiene. The subject must, therefore, be included in the curriculum for all training colleges for teachers, and must be taught in such a way as to indicate its very close association with the daily life of the individual, the family and the community. With teachers so trained, the children might be expected to learn sufficient facts about life, health and sickness as to convince them of the advantages of practising healthy living. Their knowledge would also almost certainly be carried to their homes. The Education Department has at present sanitary rules in force compelling all aided schools, for example, to provide and maintain suitable latrines, but it is rather the exception than the rule to find these. As a result the children never realise the dangers of soil pollution and the benefits to be derived from decent sanitary conditions. If the teaching of hygiene were made compulsory, a beginning would be made, and the next generation would realise the consequences of the present indifference to, and neglect of, hygienic living.

In the same connection may be urged the necessity for a new outlook on the subject of Hygiene as met with in the curriculum of Medical Colleges and Medical Schools. The medical student at present is taught in water-tight compartments and especially is this so in connection with the subject of "Public Health." In the words of the General Medical Council's resolution of January 1923, it is necessary "that throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine." Every student must be made to see the inter-relationship and close correlation between the healthy man and healthy life on the one hand, and biology, physiology, pathology, medicine, midwifery and surgery on the other. These subjects should be so presented as to impress on the student the importance of keeping people healthy, of recognising early symptoms of disease and of instructing his patients how to avoid future invalidism and disease. With a medical profession trained to take this new outlook, the "prescription" and the "bottle of medicine" would be pushed into the back-ground, and the medical practitioner's time would be largely spent in teaching people how to maintain health and how to practise healthy living. By educating future medical practitioners on these lines it is reasonable to hope that the gospel of health would be preached by real disciples of the faith and that this gospel would be accepted by the mass of the people.

Question 25.—Welfare of Rural Population.—This question has been dealt with in the memorandum already submitted, but to the subjects already mentioned there may be added that of Nutrition and Deficiency Diseases. The importance of Nutrition has no doubt been laid before the Commission by Colonel McCarrison, but special emphasis should be laid on the desirability of widely-conducted investigations in connection with deficiency diseases which are so commonly met with in this Presidency. Large numbers of people suffer from diseases such as beri-beri and keratomalacia. The high sickness and

death rates from what are called "Intestinal Diseases" are largely caused by deficiencies of one kind or another in regard to food and nutrition. It has now been proved that a high incidence of malaria, and particularly epidemic malaria, is intimately associated with defective nutrition. Recent opinion has also stressed the importance of faulty nutrition as a predisposing cause of leprosy, another widely prevalent disease. Finally there is no doubt that a large proportion of infantile deaths have malnutrition as their root cause.

These, and other isolated facts at present available, point so definitely to the close relationship which defective nutrition and deficiency have with disease, and the subject is so intimately connected with food production and agricultural research, that investigation of these matters would seem to be of urgent importance in connection with the welfare of rural populations in India.

What is required is a Nutritional Institute, with a Superintendent in charge, and several highly trained assistants, so that both laboratory investigations and field work may be conducted simultaneously. The population of this Presidency is so near the asymptotic maximum and is increasing so much more rapidly than the available food grain supplies that in my opinion it would be much more advantageous to finance a Nutritional Department than to spend huge sums on new irrigation schemes.

The Nutritional Institute would have for its objects:—

(1) The study of nutrition.

(2) The study of deficiency diseases.

(3) The study of ill-defined pathological states (far more numerous, of greater importance and less understood than typical deficiency diseases) due to insufficiency of any food constituent. These are at present all vaguely labelled "malnutrition."

(4) The study of the relation between malnutrition and susceptibility to infection.

(5) The study of substitute foods and their preparation in palatable form—*e.g.*, during times of famine.

(6) The issue of literature—simple and convincing,—on what to eat, how to eat, and methods of cooking.

With reference to paragraph 29 (*v*) on page 481 of the memorandum already submitted, further details are perhaps desirable. One of the most difficult health problems in India is the prevalence of intestinal diseases. A certain amount of research work has been done within the last 3-4 years in this Presidency in connection with the "Epidemiology of Cholera," but qualified workers are few and far between, and routine duties occupy so much of the time of those who are sufficiently interested to attempt investigation, that progress is painfully slow. What is wanted in Madras is a number of Public Health laboratories dotted over the Presidency staffed with workers who would undertake field surveys in addition to their ordinary duties. We want to enquire into the etology of parasitic infections and carry out continued research into the problems associated with cholera, the enteric fevers, the dysenteries, and diarrhoeas, all of which cause a large number of deaths annually. The King Institute, founded over 20 years ago, is unable to cope with the work, and even with increased staff, it would be impossible for one central institution to do so. The investigation units sanctioned by Govenrment 2-3 years ago have shown the amount of investigation ready to hand, and the demand for their services has steadily increased. The time has come when the Presidency should have a number of Public Health laboratory centres, say one for each group of 4-5 districts to commence with. The officers in charge would have to be well-trained medical research workers, if successful results were to be obtained. These central laboratories would be of the greatest assistance not only to the whole Public Health Department and to such local bodies as were sufficiently interested in effecting improvements in the health of the people, but would be able to render valuable aid to other Government departments.

Major A. J. H. Russell.

Oral Evidence.

14208. *The Chairman:* Major Russell, you are Director of Public Health in the Presidency of Madras?—Yes.

14209. You have put in a note of the evidence which you wish to give and my colleagues and I have had before us for some time a memorandum, one of the series sent by this Presidency, which I think you prepared?—Yes.

14210. Do you wish to make any general statement now, or shall I proceed to ask you a few questions?—I do not think I have anything to add to this memorandum,* *plus* my enclosure†, *plus* the answers to the Questionnaire which I sent in on Saturday.

14211. You point out on page 490 of your answer to the Questionnaire that in your view the time has now come when the subject of Hygiene should be included in the curriculum of all schools colleges. Is it at the present moment included in the curriculum of any schools or colleges?—Not that I am aware of.

14212. Is nothing being done to teach the elementary aspects of hygiene to children in the public schools?—I believe that in vocational schools where it is an optional subject hygiene may be taught in a haphazard way, but there is nothing done in the way I should like it to be done.

14213. Do you know at all whether any readers or text-books are used, dealing with the subject?—A certain number of text-books on simple hygiene have been prepared by different people in this Presidency and Macmillan & Co. have produced one or two written by different authors, but they are not used as a general rule; there is no compulsion about it.

14214. Is there anything in the vernacular?—Yes; these text-books that I am referring to are in the vernacular.

14215. They are all vernacular?—Most of them are.

14216. Do you happen to know whether in the instructions to teachers there is any section or paragraph dealing with the question of hygiene?—That I am not aware of; I do not think so.

14217. Have you formed any view in your own mind as to how many hours a week or month would be required to deal sufficiently with this question in schools?—I think, to start with, if certain lessons in the different readers were introduced on subjects connected with hygiene, that would be a start, without laying down any particular hours per week that might be devoted to the subject; that is what has been done in the Presidency. In the last two books that were produced (I had something to do with their production) that was the method adopted. The readers were produced, accepted by the Department of Education, and in the readers there were a number of lessons on hygiene, without calling it a reader on hygiene.

14218. Have you any personal experience of the effect of such teaching upon school children in this Presidency?—We have a certain amount of experience in this connection. During the last three years we have had what is known as 'The Health and Baby Week'; we have had a great deal of help from the Education Department in connection with the celebration of that week, and the children have taken an enormous amount of interest in the lessons and in the *tamashas,* if I may call them, that were arranged during that week; that is all that I know that has been done.

14219. But you have formed the view that teaching in this direction would be received by the children with interest and attention, and that a forward move not merely amongst the children but throughout the population might be achieved by such means?—Of course, I think that hygiene is the most interesting subject in the world, and that all children will be inter-

* See pages 472-481.
† See pages 481-489.

ested; the subject could be presented to them in an intensely interesting form.

14220. My own experience of hygiene at that age was that it consisted of not allowing me to eat the things which I wanted to eat; is that your idea of hygiene?—The old idea of public health was that it dealt with drains and bad smells; that idea is long past, although it still exists even among various Government Departments, I am sorry to say.

14221. On page 490, you describe a situation according to which not merely is no hygiene being taught, but even the rules of hygiene are being disregarded in these schools?—Yes, that is so.

14222. And suitable and cleanly latrines are not being provided?—They are not, in a large number of cases.

14223. What inspection is there to ensure that there is such provision?—The District Educational Officer inspects the schools, and he is not supposed to give a grant-in-aid unless the rules are carried out.

14224. Would you like to see that inspection put into the hands of your department.—We have the power of inspecting schools now.

14225. Do you use it?—Yes; for instance, the district and municipal health officers have the power to inspect schools in their respective areas and send in reports.

14226. What active steps has your department taken in this particular matter during the past 18 months?—We have repeatedly drawn the attention of the Education Department to this lack of latrines even in schools which are aided by Government. It is quite different with schools maintained by local bodies; the rules do not apply to these schools, but, at the same time, we inspect these schools and recommend that these things should be provided, but the recommendations in many cases are not carried out, in most cases in fact.

14227. That is as regards schools under the District Boards?—Government aided schools have got these sanitary rules; we can recommend to the Education Department that the rules should be carried out.

14228. I thought you were comparing one class of schools with another?—In regard to the schools which are run by municipalities, or by local boards which do not get any Government aid, we also advise them that latrines should be provided, but there is no rule compelling them to do so.

14229. Which group do you find most responsive to your suggestions?—Both are equally bad.

14230. On the same page you say, "In the same connection may be urged the necessity for a new outlook on the subject of Hygiene as met with in the curriculum of Medical Colleges and Medical Schools." In whose control does the direction of that curriculum lie?—The Medical Colleges of course are affiliated to the University.

14231. And the Board of Studies?—The Board of Studies has various medical members on it, and they make changes in the curriculum as advances are made.

14232. Is this defect in the orientation of the courses of the Universities world wide, do you think?—Absolutely.

14233. Are you in a position to make any representations on questions of that sort to the University authorities?—During the organisation of the teaching of hygiene which I suggested to the Surgeon-General only a year ago, I made definite recommendations and most of these recommendations have already been carried out with regard to the teaching of hygiene. Up till last year, for instance, there was only one part time Professor of Hygiene and he was supposed to teach the whole of the subject; we have, I think, 13 teachers now, each teaching his own special subject.

Major A. J. H. Russell.

14234. On page 490 under the head of Welfare of Rural Population, you refer to the question of nutrition and its counterpart, deficiency diseases. Are you familiar with the work being carried on by Col. McCarrison?—Yes, I see his work regularly and we very often talk and write to each other about this work.

14235. Do you agree with the tendency of Col. McCarrison's conclusions, not with any particular experiment but generally?—I do not think there is any doubt that he is correct.

14236. On page 491, you say " The population of this Presidency is so near the asymptotic maximum and is increasing so much more rapidly than the available food grain supplies that in my opinion it would be much more advantageous to finance a Nutritional Department than to spend huge sums on new irrigation schemes." When you talk about the asymptotic maximum there what curve is it that is exactly being approached?—That is a curve starting from minus infinity and going to plus infinity. You use the census figures available for estimating or extrapolating the curve for future years and it is just possible now, with the figures available, to estimate for 10 or perhaps 15 years. In the paper that I read before the Science Congress last year I showed that the population of this Presidency was very near the upper limit, which is the maximum we can have and if it goes about that, and there is no reason to doubt that it will go above that, the chances are that violent epidemics or famines or something of that sort will pull it down again.

14237. The last census figure in 1921 was 42½ millions roughly speaking and the previous census figure?—About 40 millions, because the Influenza epidemic in 1918 killed a larger number and the expected increase did not take place.

14238. What was the census immediately previous to that of 1921?—1911. The figure was 38 millions or thereabouts. This is, I may say, a question on which there is a great deal of difference of opinion.

14239. Would you as clearly as possible describe the converse view?—The converse view is that although our mathematical curve may describe conditions theoretically it cannot possibly describe things practically. Of course there is the proviso which must always be given to this curve and that is that conditions remain the same as to food supplies, cultivation and so on. Immediately you change these conditions or immediately you change the population from an agricultural one into an industrial one, which in this case does not apply, you would have to fit a new curve. That happened in Germany. When Germany changed from an agricultural population to an industrial population there was another large increase of population and you had to fit a second rise to the curve.

14240. Quite apart from that there is such a thing as a physiological over-draft just as there is a financial over-draft?—In my opinion the conditions in this Presidency are not likely to change so rapidly as to affect the thesis that I now present.

14241. Have you considered such emigration as takes place in relation to this problem?—Emigration in India is a negligible factor in my opinion.

14242. You know in fact what the emigration figures year by year are?—You will find them in my reports. I think last year, if I remember rightly, the total emigrants were about 60,000. I am not quite sure of that figure, but you will find it in the first pages of my report.

14243. I wanted to know whether you attach any importance to this at all?—No; it is a negligible factor.

14244. Have you observed yourself whether there has been, under the stress of life, migration from the non-irrigated tracts towards the deltaic tracts or whether rise in population has been mainly brought about by an increase in the birth rate?—I do not think the rise in population is due to an

increase in the birth rate, because the birth rate in India has always been very high. The published figures in the annual reports of the Sanitary Commissioners have been absolutely wrong. They give a totally erroneous idea of the birth rate. For instance, I can prove that by what we have done during the last four years. We have had an organisation in every district during the last 4 years and during these 4 years I have paid particular attention and I have insisted on particular attention being paid to vital statistics work, that is, the registration of births and deaths, and in my annual report for the last year I showed that the birth rate of this Presidency, that is, the registered birth rate had increased by no less than 8 per thousand in the last 4 years. This is simply due to the fact that a better organisation was in existence for the collection of these figures. There is no reason to believe that the birth rate of the Madras Presidency has increased by 8 per 1,000 in 4 years. It is simply due to the fact that in previous years, the complete figures were not registered. With regard to the question of migration of population to areas that are laid under irrigation I also have rather definite views on the subject of irrigation. If you irrigate new large tracts of this Presidency the population of that area will increase so rapidly on account of the better supplies of food and the easier way in which it is got that in 20 years you will be exactly in the same position as you were before. That is with regard to the proportion of food supplies available per head of the population.

14245. You are staving off the evil day?—That is all; you must come to an end some time.

14246. Are you quite definite in your view that the birth rate is not rising?—I think so.

14247. What are the factors that make for the increase in the population, when further food supplies are made available?—It is an economic factor.

14248. How does it act? The birth rate does not rise; does the death rate drop?—In the irrigated areas, the birth rate rises at once. In the areas that are now irrigated lands you get a very large increase in population and the result is that, in 20 years or so, you will be in the same condition as before.

14249. So that it is the population that enjoys the increased food-supply as a result of irrigation that responds and you get an immediate local rise in the birth rate?—That always happens; and that has been proved in other parts of the world as well. That is why I say that it is more advantageous to finance a Nutritional Department than to spend huge sums on new irrigation schemes.

14250. Turning to the difference in birth rate which you describe as being due to the faulty statistics that existed, is it the case that it is impossible to say whether there has been an increase or not in the birth rate?—You mean in irrigated areas?

14251. If the figures upon which you would form a view are proved to be incorrect is it not difficult to say what exactly is the position?—If you examine the vital statistics for a long period of years you eliminate the error. That is what we have been doing in our epidemiological investigations.

14252. So that broadly speaking you think the figures at your disposal will give you an accurate indication of the changes in the population of this Presidency?—Yes, allowing for the error that we know exists.

14253. Do you think that the question as to how far standards of living depend upon the growing of money crops as compared with food crops has a bearing on this problem?—I do not think that I am prepared to answer that question.

14254. You present us with a picture of growing difficulty in this matter. Have you any solution to offer?—I think the first thing is to spread education in hygiene. I am not going to mention 'birth control' because that

would be impossible in a country like this. If you educate people in ways of healthy living that result will inevitably follow. In one group of the city of Madras it has followed already. I examined the birth rate figures for Madras city in 1924 and 1925 and to my amazement found that the birth rate among the Brahmins of the city was practically equal to the birth rate among the Europeans. The birth rate of other communities gradually rises as one goes down the social scale until you get to the lowest class of all where it is practically double that of Brahmin birth rate; so that I think that if you could get education in hygiene spread among the whole population the question of over-population would not arise.

14255. Now may I take you to the original memorandum, a very interesting document, for which my colleagues and I are greatly obliged to you?—In Table II on page 473 you give the expectation of life at certain ages. How far do these tables, comparing expectations of life in Europe with expectations of life in India, require to be corrected on account of the earlier maturity in India? Is that an important factor?—I do not think that that is a very important factor.

14256. You do not think that even under ideal conditions the expectation of life in India would inevitably be somewhat shorter than the expectation of life amongst Europeans?—I do not think so, because in certain areas in the tropics which have been cleaned up, the expectation of life has increased enormously, and I do not see any reason why that should not follow in India if we had decent conditions of living.

14257. On page 474 you are talking about the hookworm parasite, and you point to the good work that has been done in this matter by owners and managers of certain tea and coffee plantations; where are those plantations situated?—In Wynaad; in the High Range, in Travancore and in the Nilgiris

14258. Have most of the plantations followed this lead?—A very considerable number of them have and they have been very glad to continue it because it has made the labourers very much more efficient.

14259. How far would it be possible, if you had the means, to carry out a campaign against hookworm in a ryotwari district amongst typical small cultivators?—Well, the really practical way, again, is to teach the population how to avoid infection. We are trying to do that as much as possible, and possibly during the next year we are going to have a scheme for the actual treatment with hookworm medicine of every person who comes as an out-patient in every dispensary and hospital in the Presidency. That is an educational method as well but it will only reach a very small proportion of the population to start with.

14260. Without diagnosis?—To every patient who comes in we will give hookworm medicine.

14261. And I presume he will be re-infected within a short period?—Probably. The effect of his infection disappears for about a year, and he recognises or ought to recognise during that time the benefit he has derived. We are going to distribute leaflets and literature on the subject at the same time.

14262. The best prophylactic measure would be universal foot wear?—That is a most impractical measure in India.

14263. What methods do you suggest?—We have started a small scheme in one district already for rural sanitation by building a large number of latrines in certain centres and leaving there the Assistant Director of the Ankylostomiasis Bureau to conduct a campaign for two or three months to teach the people the use of these conveniences, to tell them the reasons for using them and so on; that scheme, although it has been in force only for the last three or four months, has given very satisfactory results. Of course it is a scheme which cannot possibly be extended by Government to every

area in the Presidency and it is not a scheme that can be extended to every village even by a District Board; but, unless we get a certain number of centres of the kind by which we can spread knowledge on these matters, I do not think there is any other way in which we can get ahead. This centre has certainly done a great deal of good already; it has given very satisfactory and very good results.

14264. How long would it take to free the soil of the parasite if your measures are successful?—In an area which is not re-infected the parasite dies out in few months. But what happens now is that these people go morning after morning to the same spot, tread on infected ground and get re-infected every day practically; that is what it comes to.

14265. Can the parasite live on dry soil?—Yes; it lives for a certain time even in sandy soil, although not so long as in wet soil, because you will notice that in wet districts about 80 to 100 per cent. of the people are infected whereas in dry tracts like Bellary and the other Ceded Districts, the proportion is from 20 to 30 per cent.

14266. The wet is the ideal condition for the parasite?—Yes.

14267. Now, when this practice of relieving nature in the open is indulged in under dry conditions, do the parasites and germs of diseases survive the hot rays of the sun pouring down on the substance?—There is a certain amount of doubt about that, but I can perhaps say this, that in the Ceded Districts where the area is dry and where you would expect parasites of infectious diseases like cholera to die out at once under the hot sun, when the monsoon breaks (that is, the South-West Monsoon) cholera starts at once. That means that the infection from the surface of the ground is washed by the first discharge into the wells and tanks that are used for drinking water, and you get cholera at once, we know that now and we base our preventive measures on that knowledge. That is in Bellary, Kurnool, Anantapur and other Ceded Districts; it is quite different in the other districts.

14268. So that it looks as if the effect of the rays of the sun might be exaggerated?—Well, it might be put that way; but of course there are shady nooks and corners and bushes where the parasite might live longer because the sun does not get into direct touch with it. But there is no doubt about the facts.

14269. In your view, it is possible to devise a type of latrine which would be satisfactory under Indian conditions and which would not demand more attention than can conceivably be given under ideal conditions?—That is the greatest difficulty we are up against. We are trying to invent latrines which would not require maintenance or which would require the minimum of maintenance; but that is the difficulty that every sanitary engineer for the last 150 years has striven to overcome. You provide a latrine, and it is not maintained properly. Naturally I do not blame even the ordinary ryot for not going into a latrine which is kept in a bad condition; he has got sufficient self-respect to stay out. The point is that it is difficult to maintain them in a clean condition, and so far we have been unable to evolve a type of latrine which does not require some attention.

14270. Is there any hope that a latrine requiring attention could by any organisation of the village receive that attention?—I think that is what we are attempting in this centre in Madura district. We have built these latrines and we have put them in charge of local inhabitants (not officials); we have tried to stimulate interest in keeping them clean among the leading members of the population, and we constantly reiterate the idea of keeping them clean. We have had a certain amount of success there, but whether it will be a success in other areas I am not prepared to say. So far it has been promising.

14271. Do you have periodical inspections?—Yes. The whole of this money has been provided by the President of the District Board, who is intensely in

terested in the subject. Naturally of course he built these under our advice. The Sanitary Engineer, the Director, Ankylostomiasis Bureau and myself, all go every week or two in turn and see that they carry on as they ought to. I think it is necessary for officers of our class to do that to maintain interest. Whether it would be possible to leave them wholly in charge of individuals in the village concerned is another matter; I do not think it would be just yet.

14272. Epidemic diseases cost the Presidency a great deal every year, do they not?—Lakhs, crores, in fact.

14273. Do you think it would be a good policy to encourage the maintenance of latrines once supplied by the grant of some small pecuniary encouragement to the people who can look after them?—No; I do not think so.

14274. Would that be a mistake?—I think they ought to be taught to look after these themselves.

14275. Have you a vaccination law here?—Yes.

14276. What does it amount to?—In all Municipalities vaccination is compulsory; and in large tracts of rural areas it is also compulsory, but we have now to ask the President of the District Board to certify vaccination as compulsory in additional areas.

14277. That is for proclaiming a district during an epidemic?—Not during an epidemic; if we proclaim a district we proclaim it once for all.

14278. But how do you proclaim during an epidemic?—The people are quite willing to be vaccinated during an epidemic.

14279. What are the grounds of their objection to vaccination?—Indifference.

14280. Not superstition?—Well, there is a certain amount of superstition, of course. They look upon all diseases as a visitation of God. But they are now accustomed to the Vaccination Department. The Vaccination Department has been in existence for very many years, and I do not think there is any objection to it on principle; it is simply indifference.

14281. You make an important statement about malaria. Apparently in your view the problem of malaria has never been seriously tackled in this Presidency?—Well, if you look at the number of deaths from fevers (Table III, on page 473) it is 2,700,000; most of these were from malaria. I think that answers the question.

14282. Is it possible in your view, to protect a population engaged in growing rice from malaria?—Yes. In the Tanjore district, which is perhaps the most typical district in the Presidency for rice-cultivation, there is no malaria.

14283. How has that been achieved?—It has been achieved because malaria-carrying mosquitoes are not found in that rice-growing area; we get there non-malaria-carrying mosquitoes, such as *anopheles rossii.*

14284. What is the malaria carrier?—*Anopheles culicifacies* is one. Conditions vary enormously in different districts and in different Provinces of India. In this Presidency rice-cultivation does not produce malaria to any extent. We want to know why. But we have not got the staff to find out.

14285. You have not got the staff?—We may get it this year. I understand the Finance Member, I may be giving out a secret, has agreed to give it.

14286. To have a malaria officer appointed?—Yes.

14287. On the question of quinine, what does the cultivator pay for his quinine?—He does not pay anything; because he does not buy.

14288. If he did buy, what would he pay for it? Do you know the exact amount?—I am not prepared to quote the price, but it is much too high.

14289. That is what we want to know. In your view the price is much too high?—Yes; it is ridiculously high.

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14290. Can you account at all for the spread of tuberculosis and particularly phthisis in recent years?—When I came to India, about 20 years ago, I was told that there was no tuberculosis in India. I did not believe it; I think that tuberculosis has been in India for many, many years before that; but I do think that in municipal areas at least (I am not prepared to say in rural areas) the incidence of tuberculosis is increasing very much. Of course you have practically the same conditions of over-crowding in the large rural villages and the small towns, where these ryots live, and I have no reason to doubt that the conditions are exactly the same there.

14291. Perhaps your machinery for diagonising and recording cases is more efficient than it was?—That may be, but even now we have got to depend for our diagnosis on village officers, who are not medical people and who take very little interest in the registration of vital statistics. They put down everything, malaria, tubercle, typhoid fever, dysentery, as fever. I am only giving you my impression.

14292. In paragraph 12, on page 475 of your memorandum, you say, " Prior to the introduction of the District Health Scheme in 1922 and 1923 " ; is that scheme founded on any statute?—No, except that, under the Local Boards Act, each district has to provide a District Health Officer.

14293. You have nothing in the nature of a Public Health Act?—I am now drafting it.

14294. *Professor Gangulee:* But the Local Self-Government Act came into existence long before this date, did it not?—The 1920 Act provided for a Health Officer in each district.

14295. The amended Act?—The new Act of 1920 provided for a District Health Officer; before that there was no provision at all; it was only introduced in 1922 when Government provided District Health Officers.

14296. *The Chairman:* You are describing the situation since this district public health scheme was inaugurated. You say, "The three Assistant Directors of Public Health were each placed in charge of a bureau in the office of the Director of Public Health", what grade were these officers in?—Assistant Surgeons.

14297. You say, " A trained Health Officer was appointed to each district "; what grade would he be?—Assistant Surgeon; I may say that I am the only European in the department.

14298. You say further, "at least one Health Inspector works under the immediate supervision and control of the District Health Officer ". What is the training of the Health Inspector?—He has got 6 months' training in hygiene, physiology and minor sanitary engineering in the Medical College before he sits for his Government examination, which gives him a certificate as Sanitary Inspector.

14299. That sounds a pretty good deal for 6 months; is that course successful?—It is.

14300. They can cover that ground in 6 months?—What they are given they can cover, and they come up every 5 years for a fresh course for 2 months.

14301. You are satisfied with the arrangement?—I am more or less satisfied with it. The men that are taken into the Sanitary Inspectors' Class are usually people who have spent 1 to 3 years as Vaccinators, and they are acquainted with the administration of vaccination at least. Of course, I am not satisfied with the number of Health Inspectors we have got; there is one for each taluk, and a taluk has got an area of anything up to 2,000 square miles, and to ask one Health Inspector to supervise the hygiene and health conditions of 2,000 square miles is ridiculous. But, on the other hand, five years ago, we had not even that; we have made an enormous amount of progress during the last 4 years, and I have been able to get practically everything I have asked for from the Minister.

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14302. You are still not satisfied with the existing conditions?—Naturally.

I should be astonished if you were satisfied with any of the existing conditions; you are much too enthusiastic an officer for that.

14303. You say on page 477 "In the Government Budget for 1925-26, a sum of Rs. 6½ lakhs was provided for the improvement of rural water-supplies and village roads." I should like you to develop a little before the Commission this problem of the rural water-supply. First of all, have you any statistical proof tending to show that the incidence of water-borne disease is in close relationship with the provision of good water-supplies?—Yes, because in those municipal areas which have been provided with protected water-supplies you have practically abolished cholera. Even in Municipalities in the centre of constantly infected cholera tracts, cholera is introduced no doubt occasionally, but you do not get any sweeping epidemic such as you used to get.

14304. Can you check the introduction more easily when it takes place?—Only if cholera is introduced by a man coming in from outside with infection; in that case it can be stopped at once, becaused he does not spread the infection to the water-supply. We know a great deal about cholera in this Presidency; we have been studying its epidemiology for 3 or 4 years, and in certain areas I can forecast when cholera will arrive to a day. For instance, you have the Cauvery river and the Bhavani river; we know that whenever freshets of water come down in the monsoon (it starts up in the hills and comes down the irrigation channels) we are going to get cholera. It starts at the Grand Anicut at Trichinopoly, and we can work out to an exact time table that there will be outbreaks at such and such places. This takes place every year, so that we provide what we can do in the way of preventive measures accordingly.

14305. Have you tested how long the organism can live outside the human body?—The single organism does not live very long. It is by repeated infection that we get more and more organisms added to the water. What happens in these irrigated tracts is that freshets of water come down the irrigation channels and the people bathe, drink, wash, defæcate and urinate in the same channel; you have got of course large numbers of cholera carriers among your population; they are chronic carriers. With conditions such as you get through the monsoon period, these carriers begin to excrete cholera bacilli; they are deposited in the irrigation channel and within the following week people are infected there; the same thing occurs at each place, and the infection travels down stream. To control cholera in an irrigated tract is almost impossible. I am sorry the question of protected water-supply does not receive in this country as much attention as it should.

14306. You are not within sight of an administrative machine which will help you to deal with cholera?—There is no hope of it; we have got hundreds of thousands of carriers in the Presidency. But if we can provide protected water-supplies, then the carrier is no danger at all.

14307. Leaving out the question of urban areas altogether, and leaving out also the question of the irrigated districts, I want the Commission to have the benefit of your views as to the possibility of providing a better water-supply where the well is the source of drinking water. Have you any proposals on that point?—Yes, in large areas in this Presidency the type of well is a bad one. For instance, in the Ceded Districts, you get large numbers of step-wells, and step-wells are an abomination to any health officer as far as public health is concerned. Not only do they cause a large amount of cholera, dysentery and diarrhœa and diseases of that kind, but in these districts you also get a large amount of infection from guinea-worm. Practically every individual in certain villages in these districts has got guinea-worm, simply due to the fact that he wades into the water when he wants to fill his pot.

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14308. Eliminating the step-well and coming to the well from which water is extracted by means of dipping a bucket into it, do you think it is important whether the villager dips the bucket attached to the well or uses his own vessel?—There ought to be a single bucket for drawing water, but there again you are up against difficulties at once because one community will not allow persons of another community to draw water from the same well or with the same bucket. But there is a way of escape from that; you can provide wells for different communities.

14309. I understand another difficulty is that the bucket which is public property to-day might disappear to-morrow?—Quite probably; I have used the words 'communal spirit' in this memorandum; if there were any increase in the communal spirit, surely that would disappear; that is again, in my opinion, a matter of education.

14310. Now, turning to the construction of the well itself, do you think wells are polluted by surface water splashing about the well and draining back through the sub-soil?—In very many cases it takes place; there ought to be, of course, a parapet or platform to drain away the spill water, and people should not be allowed to wash their clothes and bathe anywhere near the wells, but there again it is a matter of education; the wells that are constructed under the advice of my department and constructed by the Local Boards will be different, and the wells that will be constructed out of the amount of Rs. 6½ lakhs (most of it will be spent on wells) will be built in the way we should like them to be built.

14311. Have you estimated at all the cost of putting into order the average village well?—That is rather a matter for the Sanitary Engineer.

14312. I wanted to know if you had the figure?—I do not think I can give the figure.

14313. Have you any experience of villages obtaining their drinking water from tube-wells?—Yes.

14314. What do you think of tube-wells from a sanitary point of view?—On occasions, they are useful. For instance in 1921, I think, we had a huge festival at Kumbakonam called the *Mahamakam*, a festival which lakhs of pilgrims attend. The whole of them we provided with water from tube-wells, and whether as a result of that or not,—I will not give any emphatic opinion about it,—there was no epidemic of cholera.

14315. It is rather unusual?—It is very unusual. Now-a-days, in all festivals, our District Health Officers and Health Inspectors have got a definite form in which they have to make recommendations before the festival, and another form in which they report after the festival, so that we know whether anything has happened. In several instances the Agricultural Department have lent oil-engine pumps and private companies have lent oil-engine pumps as an advertisement; we have put up a fence round the only water supply for the pilgrims, and pumped up the water to a tank, and distributed it by means of taps. As a result of such arrangements epidemics have been avoided. It can be done with organisation and with money. These local bodies in charge of festivals, the Taluk Local Boards, have the administration of public health in their hands, and they regularly, in fact almost universally, spend as little as they can, and therefore we do not get all that we would like to get. At the same time, the District Health Officers have a considerable amount of influence with the Taluk Board Presidents; as a result we get more done than we used to get, and I think the position is quite favourable. As far as the control of cholera in these festivals is concerned, we have one instance of how to stop infectious disease by providing a reasonably protected water-supply.

14316. Is the practice of raising water from a well and pumping it into a gravity tank sound from the hygienic standpoint in this country?—We have large schemes run on that method.

14317. I wondered whether the temperature to which the water would rise during the day made it unpopular?—We have provided those in many cases; even some Municipalities have now schemes like that.

14318. Have you ever heard any suggestion for the use of wind mill for that purpose on the coastal zones?—Yes; but I have never seen it tried, except, I think, in one instance; I had my attention drawn to the fact that a Kite pump had provided water for some zamindar or other for many years; that is the only instance I am aware of; I do not see any reason why it should not be useful; I am not familiar with it.

14319. If you could persuade the wind to do the work, you would have got over half the difficulty, would you not? Pumping by hand is not a popular pastime?—No; but for the larger village I do not think it would be necessary to pump by hand; you could pump with a small oil-engine. I saw one the other day which discharged 500 gallons a minute and it costs only Rs. 400; it was constructed on the principle of a motor bicycle and it gave a large flow of water from the pump, which would be quite sufficient for a fair sized village.

14320. Once you get to the stage of having a sufficiently large tank above the level of the highest part of the village, you are not very far from the point where you could run on half inch pipes straight down?—I do not think that is a development that we could anticipate for a long time; it is one which I think is unnecessary in most cases.

14321. Time is not a sufficiently valuable thing?—The women are accustomed to go for water to a distance and if you provide taps they would be quite willing to go half a mile and even more. In some of the Ceded Districts they travel five miles for water in the hot weather.

14322. On this problem of water-supply which seems to me at any rate one of the most urgent problems in India at the moment, do you think it has ever been envisaged not only by this Government but by other Provincial Governments in India in its relation to public health, to agricultural efficiency, to the enormous incidence of diseases?—I think you will find it envisaged in Public Health Reports published all over India; but I do not know whether you find it envisaged in anything else. I am not prepared to discuss other departments of the Government of India in this connection.

14323. I am sure you will realise from your long experience that some things which are highly desirable are unattainable. You have no doubt pondered this problem and I think the Commission will greatly value your views as to whether, within the financial capacity of India to-day, some broad general schemes for improvement of rural water-supply might be undertaken?—I think that in non-irrigated areas you could certainly improve the present type of well. That would be a great improvement and would certainly prevent a considerable amount of disease that exists at the present time. But in irrigated areas the people prefer the irrigation water. They prefer going to an irrigation channel to using a well and I think you would have to go very slowly in spending money in irrigated areas as long as that preference existed. We try to prevent people during festivals and during cholera seasons from taking water from irrigation channels, but it is practically impossible. I can tell you an incident that happened the other day. An Assistant Surgeon, who is not a Health Officer but who is very interested in preventing cholera in a certain village, found that the only way in which he could stop the people, in spite of watchmen and policemen, from taking water from the irrigation channel was to throw a dead dog into it; then they stopped; otherwise they preferred that water to the well which was in the village.

14324. So that in any important expenditure you incur, you would have to go very carefully when you are considering whether it would be worthwhile? Is that your view?—I think so.

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14325. What are these health dramas which have been, according to your note, so well presented?—We get Tamil *pandits* and Assistant Surgeons who are of a poetical turn of mind, and people of that kind help us by writing short scenes, allegorical scenes, with characters representing disease, death, life and so on. These are remarkably attractive in many ways; many of them attract enormous audiences. Of course the ordinary Indian audience does not mind sitting 8, 10 or 14 hours to see the end of a drama; some of them go on that length of time. Even the few scenes that I have seen myself are extraordinarily good and, I am quite sure, are written by people who themselves know the facts of public health; they are a great factor as far as the advancement of knowledge in hygiene is concerned.

14326. Do they require financing?—Yes, they require financing; but the authors very seldom ask any fees for writing. In fact I do not think I have heard of any one who wanted to sell his drama. Most of them are quite pleased if I or one of my officers write a foreword to them commending the poetical style, and so on. They are quite pleased to have them used. Generally some leading citizen at the place where it is enacted, presents the author with a gold medal or some thing like that, and he is quite satisfied.

14327. *Prof Gangulee:* Are these dramas enacted mostly in villages?—Yes; they are enacted in villages particularly in Health and Baby Week. The Health Inspectors arrange them in village areas.

14328. *The Chairman:* Will you tell the Commission a little more of your experience with the issue of leaflets in the vernacular? Are they read, do you think, once they are distributed?—I suppose a certain proportion of them are thrown away, but I should think a fair proportion of them are read, because, for instance, even in Madras city during the last Health and Baby Week, we actually sold about 100,000 of them and people are not going to buy things to throw away. Although I am talking of Madras city, the Health and Baby Week is held during the Pongal holidays when there are a large number of visitors to Madras from the mofussil and I have no doubt that a proportion of those leaflets at any rate were bought by people from the mofussil, that is the rural population.

14329. So that it is the considered view of your department that in matters of health, leaflets in the vernacular, if they are good enough and broadcast in sufficient numbers, produce a very definite effect?—Yes; but leaflets and literature dealing with health matters must be got up in an attractive manner otherwise they are a waste of money. The difficulty is of course to find some one with medical knowledge and the journalistic and advertising instinct to produce them in the proper form. That has been my difficulty, to get an officer or officers who have a combination of these qualities. We have produced a certain amount of stuff which is reasonably attractive, but my own criticism of a good deal of the material that we produce is that it is not attractive enough.

14330. Do you look forward to a day when you will have a definite publicity office?—I have put that up to Government and I believe they are accepting it for next year.

14331. Still you are not satisfied with the existing conditions?— No, because the Madras Health Council is a non-official body. During the last three years the Madras Health Council, a non-official body, has tried to cope with this question and of course what has happened is that myself and my two assistants and the Health Officer of Madras, who are on this Health Council, have done the whole work. The other workers were voluntary workers; that is, all the work was done by us. The Government on my recommendation gave the Madras Health Council Rs. 8,000, so that I thought that, if we were doing the whole work, we ought to have the whole section under our control and the whole of the work under our control. In 1927-28 we intend to have a propaganda section in my office. I consider that this propaganda work is of extreme importance.

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14332. Are you going to attempt the production of cinema films?—Well, if we can get the money I do not see why it should not be done. We have got a malaria film from the International Health Board at present which we use and which is quite reasonably good for the purposes of the country, because it was prepared in the Southern States of America and the conditions there apparently more or less correspond to the conditions that we find in rural areas here. We exhibit it as it is and the people take an intense interest in it. I do not see any reason why cinema films should not be produced.

14333. You are talking about medical inspection. What about the teeth of the rural population?—From the figures that are available, diseases of the teeth are very common among children. The Medical Inspection Reports that we get show that there is a good deal of minor disease in the young population of the Presidency which could easily be corrected if it were taken in hand.

14334. Is there a lime deficiency in the diet?—The carbo-hydrate diet which the ordinary individual takes in this Presidency is I should think very deficient in calcium.

14335. In paragraph 24, on page 478, you are asking the local bodies who are getting a great deal of service from you to come forward with funds in connection with propaganda work. Can they afford to pay for what they are getting?—Yes; they can. I might say that I tried the alternative which I mentioned there. I say in paragraph 24 that 'local bodies may legitimately be asked to acknowledge their indebtedness for the success of their health week celebrations'. I wrote round to all District Boards and Municipalities and asked them if they would give grants to the Health Council as a last effort to maintain the financial life of the Health Council. During the last few months I have been able to get, I think, 14 District Boards and 20 Municipalities to give grants of varying amounts as a voluntary gift; but that, I am afraid, was a personal appeal and certainly I would not get it a second year in succession. But local bodies raise quite large sums of money for celebrating the Health and Baby Week and the balances left over at the end of the week have been used for buying the stuff that we prepare.

14336. In paragraph 27, page 480, you refer to a scheme of subsidising medical practitioners on condition that they settle down in rural areas. What does it cost you to persuade a medical practitioner to settle down in a rural district?—The Madras Government have attempted it by offering Rs. 400 to Rs. 600 a year according to qualifications.

14337. *Prof Gangulee:* Are these medical practitioners passed from your College?—If they are L. M. Ps. they are from the Medical School.

14338. What is L. M. P.?—Sub-Assistant Surgeon. I do not think any medical graduate has accepted this offer. I think the last figure shows there were 183 who had started in the Presidency.

14339. Paragraph 28, page 480, dealt with dwelling houses. Do you think that any experiments or research work might be done on this problem of housing to devise a better type of house which is within the ryot's means?—Yes, I think it would be a very good thing to try experiments. You might devise a type, but whether you can get them to adopt it is another matter, because each area in the Presidency has a different type. Even adjoining districts have different types, so that you would have to evolve plans, modified according to hygienic principles, on the type which is in use in the districts by the ryots themselves. The only way you could get them to accept them would be by modifying their own type.

14340. Have you any other proposals for improving housing?—I do not think it is possible to suggest that the houses should all be built with damp-proof floors and things like that, because I do not think they will do it; but at the same time you can provide a damp-proof floor quite easily by building a plinth of dry stone; it is quite a satisfactory damp-proof floor,

and if that were used you would prevent, I think, a very great deal of the respiratory diseases which are now so common all over the Presidency.

14341. Have you ever considered the practicability of recommending the raising of houses above the level of damp land by constructing the houses on piles?—I think you would attain the same end by providing them with a high plinth of stone; but then of course in large tracts of this Presidency, for instance in the deltaic areas, you will find it very difficult to provide stone. The District Boards there find the laying of metal on the roads an enormously expensive item because they have to cart every load from other districts.

14342. Probably wood would offer the same difficulty?—Wood would not be any good, because it would simply rot at once or be eaten by white ants.

14343. In paragraph 28, page 480, you say, "An attempt has recently been made to constitute model villages." Is that a concentration of means on a few villages?—Yes; I tried to induce the Presidents of Taluk Boards, with the help of the district authorities, to select one or two villages in typical areas in their taluk and to spend all the money they had available for general sanitation on the one village and not to do what they have been doing up to date. If they have, say, a thousand rupees in their budget for general sanitation they scatter it about, a few annas here and a few rupees there, and no permanent good is effected. I suggested that they should spend all that money on one or two villages for two or three years and show what could be done with judicious expenditure. That has been done in certain areas; of course I cannot say how it is going to develop, because it has been only very recently introduced; but I think that is one of the ways in which we might be able to educate a certain proportion of the rural population, at least, in better hygienic methods of living.

14344. Do you think there is room for research by some All-India body on some of these fundamental problems; say malaria?—I think the Government of India have an All-India malaria organisation.

14345. Do you feel there is room for more active research by that body?—Very much more. I have suggested to Colonel Christophers, and he has accepted it, that if I get a malariologist, he should link up with the All-India organisation; but one officer for 44 millions of people in the area we have got here is playing with the problem.

14346. I suppose this disease is causing more misery and more monetary loss than any other?—Yes.

14347. I suppose the memorandum on the future development of the Public Health Service was a document which you have presented to the Government of Madras; was it not?—Yes; it was presented in October 1925.

14348. You say, in paragraph 6, on page 482, "The Public Health Department has during recent years devoted considerable time and though to the investigation of foci of infection as regards water-borne disease, and the information now available would be of immense use, if Government and local bodies could set apart, year by year, definite sums for the improvement and protection of water-supplies at these foci and along the usual known routes of spread of infection"?—Yes, that is really what I was talking about before.

14349. Has this information been collated and arranged?—It has been published. I have been writing a series of articles on the epidemiology of cholera which have appeared within the last two years in the Indian Journal of Medical Research; and a great deal of information which does not appear in these papers is available in my office.

14350. I thought I read there between the lines a suggestion that a great deal of information had been collected which you had no means of putting together; but I see I was wrong?—I have spent a considerable amount of my spare-time in writing up these papers.

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14351. On page 484 you mention an officer called the Registrar-General of Panchayats. In your experience are the panchayats helping in matters of hygiene?—Yes and no. Yes, they help us in carrying out our propaganda work. They are of assistance during the Health and Baby Week and when we arrange for lectures and demonstrations of that kind in panchayat areas; but most of these panchayats are still in an infantile stage of development and have not been able to provide the funds required for expenditure on public health measures in their areas. I do not see any reason why that should not come in time.

14352. Do you think the panchayat system gives hope for the future?—Yes.

14353. In your experience is it likely to grow and gain strength?—I think it will be a good thing to have a village organisation in every village.

14354. In paragraph 10, page 485, you say, "In the absence of a Public Health Act for India." Are you in favour of such an Act being passed?—I think it would be a good thing for each Provincial Government to have a Public Health Act; the proposal is now before the Madras Government.

14355. On page 486, paragraph 14, you say, "Safe milk supplies must be assured." Take the urban districts first, say Madras City; are there local rules or bye-laws here as to the sale of milk?—We have got an Adulteration of Food Act which was passed in 1918, but which has never been brought into operation, because of our lack of standards. Two and a half years ago a Public Analyst was brought out from England; he has now fixed the standards for milk, butter, *ghi* and milk products generally. The Government have recently published rules laying down standards for these substances for Madras City, and I hope very shortly in Madras City we shall have that Act in force. Of course it is a permissive Act, and Municipalities may adopt it or not as they like. The difficulty of course will be to get the Municipalities to adopt it.

14356. Have you at the moment the right, as a health authority, to inspect the milk offered for sale in public places in Madras City?—No.

14357. In your experience, is milk a fertile source of infection in this Presidency?—Yes, unless you see the cow milked before your own eyes in no case will milk be non-adulterated. The milkmen use any water for adulterating milk; they do not care what they use.

14358. But now that your standards are fixed, do you look forward to the regulation of the milk supply as a feasible administrative operation?—Yes, if the Health Department of the City gets proper help from the magistracy. What I mean is this: Several years ago the Health Officer brought up a series of cases before the Magistrate's Court in connection with adulteration of food and drink. All the cases were dismissed because the Magistrate held that he had not proved his case. In fact there were no standards. If the magistracy would give a certain amount of help to the Public Health Department, then we might make some progress. I may illustrate what I mean from the subject of vaccination. We produce a parent before a Magistrate for failing to have his child vaccinated. The case will be postponed once, twice, thrice, or a fourth time; it eventually comes before the Magistrate and he fines the parent two annas. Of course that does not prevent the parent from carrying on the same process for another six months. That is exactly what would happen in connection with food supplies and milk supplies if the magistracy do not recognise the position; the punishments inflicted are far too small.

14359. Are venereal diseases a serious problem in this Presidency?—They are very common, but I do not know whether you can call them a very serious problem. The average person who is infected does not worry about it.

14360. Is that so in the rural districts?—I think the same thing holds good. We have no exact figures for these diseases, but from our hospital

experience we know they are very general, and of course, cause a considerable number of infantile deaths, for instance.

14361. Is there much blindness?—Well, most of the blindness is due to small-pox.

14362. You do not attribute much of the blindness to venereal diseases?—I could not give you any figure which would be of any use.

14363. Have you experience of the attitude of educated Indians in the Presidency towards sanitation and hygiene generally?—I did not quite follow the question.

14364. I was going to ask you this whether, amongst the class which provides officers for the public service other than the medical, there is a real appreciation of the importance of these questions of hygiene in their bearing upon public health and public happiness?—I would like to reply to that in two different sentences. For instance, when this district health scheme and the additional organisation were introduced, there was a tremendous amount of opposition to it in the Legislative Council, but the Raja of Panagal, the Minister for Local Self-Government, managed to put it through, and within 18 months those who were most vehemently opposed to it were asking for its extension.

14365. What was the ground of their opposition?—I should think that probably it was political; I can think of no other reason, because in 18 months they asked for extension of the scheme, and the opposition died out completely. The second reply I would put thus: In a certain Municipality in this Presidency, the Chairman, who is a very well educated lawyer, was induced to employ for his Municipality a trained midwife, at my instigation. I said it was necessary that the Municipality should have a trained midwife. He engaged one and paid her from the municipal funds, but when his eldest daughter was going to have a child, he sent for the *dai*, and did not employ the trained midwife; that is an illustration of the attitude of the educated classes.

14366. Was that through disinclination to spend money?—No, I do not think so; probably it was feminine influence; of course, the women are the most conservative members of the family; they do not like these new-fangled ideas.

14367. *Prof. Gangulee:* I should like to ask you about this Government of India scheme for an All-India anti-malarial organisation. Could you give us some more information about the All-India scheme? How does it link up with the Provinces?—I do not think it has got to that length yet. At the Research Workers' Conference last year, Colonel Christophers, who is in charge of the Malaria Bureau at Kasauli, elaborated his scheme and laid it before those present. It was accepted by them. I am going up to Calcutta in 10 days for the next conference and we shall probably be told what stage it has reached; I am not aware whether the Government of India has accepted it or has extended it or not.

14368. On page 480, you are referring to the Madras Legislative Council as having recently passed a Nurses' and Midwives' Registration Bill. In the rural areas, do you have quack doctors, like barbers and so on, practising medicine?—Well, I suppose the village practitioner is usually to be met with, the man who professes to know something about medicine.

14369. Is there no provision for the registration of these quack doctors?—No; registration is for fully trained nurses and midwives.

14370 What is your relationship with the International Health Board that you refer to here?—The International Health Board of America sends workers out to different countries on invitation.

14371. Was there any invitation by the Government of India?—The invitation can be sent by any Government. The Madras Government asked the International Health Board to send an officer over about 6½ years ago,

and Madras is the only Province in India that has got an officer of the International Health Board. The Board has workers in 150 different countries of the world.

14372. Do the Government of India make any contribution to that work?—None at all. The Government of Madras pay half of the International Health Board's expenditure in the Presidency, except the salary of the Director himself which is wholly met by the International Health Board.

14373. Can they continue this work for any length of time?—We are hoping that they will continue the work, but the policy of the International Health Board is to initiate and stimulate activity, and then withdraw in favour of the local Government.

14374. Before they undertook the intensive propaganda that you refer to here, was there no intensive propaganda undertaken by the local Governments?—There was no Health Department; that is what I would say; the Health Department is of very recent growth in this Presidency. There was a Sanitary Commissioner with an Assistant, but there was very little else. There was no organisation, not what I would call an organisation; that has only developed within the last four years.

14375. On page 485 you say that the Department of Public Health should be a strongly centralised, powerful organisation. Could you amplify that and give us your reasons for holding that view?—I was not referring to any executive function by executive officers of Government. Perhaps it is a little unfortunately worded and in fact I have withdrawn that sentence recently. What I mean is that there ought to be a centralised Public Health Act which the Government ought to be in a position to enforce; that is what I mean by 'centralised'; the phraseology is a little unfortunate.

14376. Further on you say, "with the advice of a Central Board of Health." I would like to get your idea about that?—We have got a Public Health Board at present and all important questions are referred to that Public Health Board, and it advises the Minister.

14377. That Board is not a Government of India Board?—No, a Provincial Board.

14378. *Mr. Calvert:* I gather, from your replies to the Chairman and your memorandum, that you regard the improvement of the conditions of hygiene in the rural areas as very largely a matter of adult education?—No, I would not agree with that; it is very largely a matter of child education.

14379. But you have to wait a long time for the child to reach the adult age?—If you educate the school children, you are going to educate the next generation.

14380. The evidence given before us has been that educating children is rather like pouring water down a well, nothing happens?—Well, I think the child's mind is the most receptive mind. When you start to try to teach an adult to change his habits, you are up against an enormous problem.

14381. Would you teach hygiene in schools?—Yes, and in colleges.

14382. Teaching hygiene in schools pre-supposes teachers who believe in what they are going to teach?—Yes.

14383. Will they be available on the present salaries?—They would teach the subject on the same salary as other teachers teach other subjects.

14384. But hygiene is rather a more difficult thing than teaching literature?—I do not agree with you; I think hygiene is not a difficult subject to teach.

14385. Having got your population and taught them what to do, would it involve a large expenditure to maintain hygienic improvement?—Probably, it would.

14386. Is this hygienic improvement in rural areas a practical proposition under existing conditions?—I think a very great deal could be done with the expenditure of very little money if the people knew what to do.

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14387. *The Chairman:* Who are the people?—The rural population.

14388. *Mr. Calvert:* The people who are going to do it are the adults, not the children?—I say that you are going to find the adults more difficult to educate, but if you teach the children, in the next generation you will have better-informed adults.

14389. In your experience, do you find that the adult population is not amenable to education on new lines?—I think that is the general rule all over the world.

14390. Has your policy of subsidising medical practitioners in rural areas met with success?—In certain areas I think it has been successful, but of course the scheme has only been working about 18 months and it is not possible to say what is going to be the final result. It depends to a great extent on the personality of the medical officer; if he has any grit and makes up his mind to be a success, I think that in many centres he would be a success. But so many of these people give it up at the end of 5 months and say there is nothing to be done; that is absolutely wrong.

14391. You are finding difficulty in getting the right type of man?—Yes.

14392. Of course, a very large part of any policy of improvement of hygiene would require finance. Would you suggest that this finance could be met by reducing the expenditure on the cure of disease, would you rather have more of prevention and less of cure?—That is exactly my attitude; I think there is far too much money spent on building fine hospitals and expensive buildings of that kind, and far too little spent on preventive medicine; India should fall into line with other countries and spend more on prevention.

14393. Less should be spend on building hospitals?—Yes.

14394. Do you think there is much hope of organising the rural population to undertake their own sanitary improvements?—I think it is a very difficult problem to get them to do that sort of thing, but as I have already stated to the Chairman, we are carrying out an experiment which has shown a reasonable prospect of success; that is all that I can say; we have only just started with our own experiment.

14395. It is a question either of taxing them to pay somebody else to do it for them, or teaching them to do it for themselves?—In this country, you will not get the ordinary individual to do it for himself.

14396. Not unless he is properly taught and organised?—Yes.

14397. I find some difficulty in following you on the question of irrigation and population. I think you suggested that if you increase irrigation you merely get an increased population, and in 20 years things will be as bad as they were before?—Yes.

14398. I have got before me the figures for the last 6 census enumerations in the Punjab which do not bear you out at all. I find that in an irrigated area of 12 million acres the population is increasing very slowly; there is no sign of any *pro rata* increase of population?—You have got to remember that in 1918 you had a tremendous influenza epidemic; you must also remember that in the Punjab you have got intense malaria all over the Province. My knowledge of the Punjab is very slight, and I am not prepared to discuss the Punjab figures; what I stated would reasonably apply to my own Province.

14399 But the food-supply is not the only check on population?—No.

14400. Not by any means; under modern conditions, it is by no means the important check which Malthus thought it was?—That is true.

14401. Assuming that the population tends to increase, there must be an effort to increase the food-supply?—Yes.

14402. Therefore, would you advocate irrigation schemes in order to meet that increasing population?—Yes, but I meet that by saying that in 20 years you are in the same position as you were before.

14403. Our figures do not in the least bear you out there?—I have reason to believe that what I say is true in other countries.

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14404. Looking at it from another point of view, would not an increase of irrigation possibly supply the finance to help you in your hygienic improvements?—You mean by the sale of the grain?

14405. No; increase of the wealth of the people. Greater wealth and higher education might go a fair way towards these improvements in dwellings and sanitary conditions?—To start with, there might be a balance over, but not eventually, if my thesis is correct.

14406. It is only a long spiral staircase leading to nowhere. You do not intend to decry irrigation as some blind alley, which leads to nowhere?—No; I felt a little diffident about introducing the subject at all, but having published one or two papers on the subject, I thought it was just as well that I should mention it, because I think it is just as well to present this opinion in contra-distinction to the one that you apparently hold.

14407. If you were searching round for the best rural sanitary conditions in India would you not go straight to the Punjab Canal Colonies?—I am not aware of what the conditions are in the Punjab Canal Colonies.

14408. *Mr. Kamat:* Could you give us an idea of the total cost to this Presidency of this new Health Scheme?—We have got 24 districts with a Health Officer, the average rate of pay being Rs. 440. We have got now 252 Health Inspectors, the average pay being about Rs. 90; that is practically the whole cost.

14409. Was the opposition to the scheme in the Legislative Council which you referred to due to the finance of it or for any other reason?—Yes; Government had been giving the districts a non-statutory grant for roads; they had been giving that grant for a series of years until some of the districts had got the belief that it was more or less a statutory grant, or at least it was a grant that was going to be given for ever. In order to finance this scheme which I was very anxious to introduce, we looked round for funds even during a time of considerable financial stress; the Government finally decided that, under the Local Boards' Act, they could order districts to provide funds for a Health Officer out of this non-statutory grant; so that it was really money already being paid to the districts, only it was to be set aside for another purpose.

14410. Have you got anything like a scheme here to train the indigenous *dais* as we call them in Bombay, that is the midwife class but untrained?—There have been various attempts made to introduce teaching and training of *dais*, but I think I may say that every one of these schemes has failed.

14411. So that even this new scheme of yours leaves the question of training maternity *dais* untouched?—It is not touched. I think the Surgeon-General is coming before you on Friday and you might ask him about that because it is the Medical Department's work.

14412. *Rao Bahadur Muniswami Nayudu:* You told us that a number of leaflets on public health matters are printed and circulated broadcast. Have you collected all of them and issued them in book form?—No.

14413. Do you consider it would do some good if you collected all of them?—No; I think that the books that have been already published containing hygiene lessons probably contain all the substance of the leaflets that we have produced.

14414. Then you have got about 252 Health Inspectors. You say they are not sufficient and you want more of them?—I only say that because it seems to me only to be reasonable to think that one Sanitary Inspector cannot look after the whole of a taluk area.

14415. One of their duties is to carry on propaganda and give popular lectures in villages?—Yes.

14416. And you consider a fairly good knowledge of the vernacular language is necessary for that?—Yes.

14417. Are you satisfied with the distribution, according to language qualifications, of your Health Inspectors?—The distribution of Health Inspectors is always primarily decided on language qualification.

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14418. Do you think that of these 252 there is a fairly large proportion of people who can deliver lectures in Telugu areas?—The difficulty has been up till recently to get a sufficient number of Telugu speaking Sanitary Inspectors; but that difficulty is gradually being overcome, because both in the case of Health Officers and of Sanitary Inspectors I have a good deal to do with the selection of candidates for training and I make that a point.

14419. So you are trying to take more and more of people who know Telugu for training?—Yes.

14420. *Sir Ganga Ram:* Have you any system of Red Cross or St. John's Ambulance here?—Yes.

14421. Do you not think that these boys had better be taught first-aid in preference to hygiene which they soon forget?—I think first-aid is very good, but it is hardly what I would call the principles of hygiene.

14422. I do not substitute it necessarily but I say in addition you might teach that as a more practical subject?—The question of training Sanitary Inspectors in first-aid is now under consideration; so if we train our Health Inspector in first-aid naturally he will be able to explain.

14423. Have you any institution here such as we have at Kasauli for inoculation against rabies?—The Pasteur Institute at Coonoor.

14424. Do they undertake this treatment?—Yes.

14425. You mention that you would have field surveys. What do you mean by field surveys?—In connection with public health laboratories I would like to have trained officers; they would be medical men, of course, trained research workers and they would not only do laboratory work as such but they would go out to the villages and make health surveys in whatever lines they were doing research work in.

14426. With regard to rural water-supply, if the Chairman will allow me after the evidence is over, I will give you a sketch of a method of producing a perfect water-supply, that is, the system I have in my village, which the Commission will see. By tube-wells, do you mean gravitation wells which they sink 20 feet deep, or tube-wells going to about 200 feet in depth?—The tube-wells we used only drew off the shallow water; but in one case they sank a well which apparently tapped an artesian source and they still have it; they use it for the town and it has been in use for the last 12 years.

14427. *The Chairman:* The hygienic virtue of a tube-well is, I take it, that the sides of the well for considerable distance are immune from penetration by water on the surface?—Yes.

14428. *Sir Thomas Middleton:* You have already expressed the view that more should be spent on public health relatively to the expenditure on hospitals. In Madras the expenditure on hospitals is about 64 lakhs per annum and on public health, about 40 lakhs. Would you care to give precision to your view by indicating in what proportion you would distribute the expenditure?—No; I do not think I can give you any figure at once as to the percentages. But what I say is that the proportion to be spent in future should be spent rather on preventive medicine than on expansion of the hospital system.

14429. If the present rate is 64 and 40 lakhs, would you like to say that in the near future you would have the proportions reversed?—I do; it is a very excellent idea.

14430. I just want to get some idea of the relationship which you had in your mind?—I have already stated publicly in Madras about 18 months ago that I envisage a time which is not so very far away when there will not be any medical budget but the whole of that money will be allotted to public health.

14431. Apart from the work being done by Col. McCarrison, have there been any dietary studies in this Presidency?—Not that I am aware of.

14432. Therefore any opinion that is expressed as to under-nourishment is to be based on general observation?—I think I have indicated in my reply

to the question that there are a certain number of facts with which we are faced with at present. For instance, there are a large number of poeple who suffer from beri-beri and other deficiency diseases.

14433. I was not thinking for the moment of deficiency diseases. I was thinking of general under-nutrition?—You mean starvation?

14434. Yes?—I think I already gave you an instance of that in my memorandum.

14435. You yourself think, no doubt, that among the agricultural population many are underfed at the present time?—I suppose that would cover the case.

14436. Have you any doubt that the primary cause is poverty? Is it lack of knowledge or poverty, that is the cause?—I think both, because they do not know about the diet, how to regulate the diet, how to cook the diet, and they do not get the best out of the available food-supply.

14437. Because of the lack of knowledge?—Lack of knowledge undoubtedly is an important factor.

14438. But you would agree with me that the primary cause of under-nutrition is poverty?—That is an economic question which I am not prepared to answer.

14439. I ask you the question because you seem to put us on the horns of a dilemma by your statement about expenditure on irrigation and expenditure on nutrition. I suppose the primary cause of malnutrition in the Presidency to be poverty?—I do not agree with that. Malnutrition is not primarily due to poverty; malnutrition is quite distinct from poverty.

14440. Let us get away from the word " malnutrition "; let us say " lack of food," or " starvation." If this is due to poverty does not irrigation offer the most obvious means of quickly increasing the supply of food and the resources of the agriculturist?—Yes, if it is made available for the poor ryot, but it is not. You put down an irrigation scheme and you produce, whatever it is, say, 2 million tons more of grains but the ryot who grows it does not get it.

14441. But the ryot who grows grain surely participates to some extent in the increased output?—To a very small extent; that is my experience in Madras. Take the *mirasidars*. I will give an actual case. During the year 1922 there was a big epidemic of relapsing fever in the Tanjore district, the first time we had relapsing fever in Madras. It killed about 80 per cent. of those who were infected. The 20 per cent who recovered underwent a prolonged convalescence. The convalescence was so slow, these people were so weak and their resources were so minute that many of them died of starvation because they were unable to work. What was the reason of that? The reason was that the landlord or the *mirasidar* took the whole of the grain and gave the cultivator only a dole, and if the cultivator did not work for that dole he did not get it.

14442. I agree with you as to the necessity for nutrition work in this Presidency; but I would like you to explain a little more fully than you have already done the bearing of this note on the problem of poverty?—This note that I drew up, I drew up in consultation with the Surgeon General who is also appearing before the Commission. I understand too, that Col. McCarrison is coming down to address the Commission and I would rather that you raise the whole question with these two gentlemen than with me.

14443. I understand the position now. The Nutritional Institute which you had in view is in connection with the work now being carried on by Col. McCarrison; it is not a separate institution for the study of the food requirements of man?—Not necessarily; I do not think it is a study which is at all to be associated with what you call the poverty of the ryot; poverty is quite a separate subject altogether; that is a question with which of course I have very little to do. I am not prepared to discuss whether the ryot is poor or not; what I say is that these investigations are necessary, because

I know from my experience that he suffers from a large number of deficiency diseases. Poverty may have an additional bearing but that is not for me to say.

14444. It so happens that the general dietary of Madras lends itself to the development of these deficiency diseases?—Yes.

14445. You are no doubt aware that in parallel studies which are being made in many parts of Europe at the present time, malnutrition is found to be closely related with poverty?—Yes, I can see the connection.

14446. I suppose you know of the work that is being done, for example, in Glasgow under Prof. Noel Paton?—Yes.

1447. I was wondering whether in suggesting a Nutritional Institute here you had in mind doing for the masses in the Madras Presidency the kind of work being done among the poor in Glasgow by Prof. Noel Paton, and in other parts of Britain by special agents, under the Council for Medical Research?—What this Nutritional Institute would do would be by way of teaching the people how to use the grain which is available, what would be the best way of using the available resources; it would have nothing to do with the question of what the ryot should do to earn more money or what proportion of the grain the landlord should give to the ryot for his work. That has nothing to do with nutrition as such or the Nutritional Institute; nor has it anything to do with public health, except in so far as, if a person is starved, he is naturally more pre-disposed to disease. I should not like to confuse the question of poverty as such with malnutrition as such.

14448. You agree that in general the two are very closely associated?—Well, naturally they are.

14449. The position of Madras is rather exceptional?—In what way?

14450. In the way you suggest that the people are fed on paddy which in itself is a very likely thing to cause deficiencies. In areas where wheat-eating prevails, the population is not subject to the same danger?—Quite so, but I do not see how you are going to get the Madras ryots to grow wheat any more than I can persuade the Madras population to leave off drinking bad water.

14451. I think that, though possibly you and I attribute somewhat different values to what we call deficiencies, we might agree as to the importance of the total energy supply?—I think so.

14452. *Dr. Hyder:* Would you like to have the preparation of these returns relating to vital statistics under yourself rather than under the revenue agency?—That question has been considered, but a public health agency does not exist in the ordinary revenue village, so that we have to depend on revenue officers to collect these statistics.

14453. Is there occasionally a water famine in some of these dry districts?—In 1922 there was a water famine in the Ceded Districts.

14454. I suppose you would agree with me that no Public Health Department could work miracles if you have a district like Anantapur with a population of 1 million and a district like Madura with a population of 2 millions using quinine worth Rs. 5 in the one case and 3 lbs. in the other case per year?—Yes.

14455. In regard to these fairs and festivals, I suppose legally the local bodies can impose charges to meet the cost of sanitary arrangements?—What they usually do is that occasionally they get permission to levy pilgrim taxes, but ordinarily they license temporary booths and shops and they charge so much per cart that comes into the festival, and in that way they usually raise enough to provide primitive sanitary arrangement or additional sanitary staff. Very often these festivals are associated with large temples, and of course the temples derive a very considerable income from them. The question has arisen as to what proportion the temple trustees should pay for the sanitary arrangements, and in a considerable number of cases we have been able to come to an agreement with the temple authorities.

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14456. In regard to the interesting thesis on the question of population, I think you would be supported by experts in economics; but I wonder whether you would look at the other question also. If you increase the food-supply, there is a tendency for the population to increase?—I say there would be rapid increase.

14457. That is what the experts on the population question have said. If you improve the public health, I wonder what effect that would have on population?—Well, if we do not have any big epidemic between now and 1931, we are going to have a large increase in population over 1921. Take the case of cholera. In 1918, there were 128,000 deaths from that alone in this Presidency; in 1924-25, when the next periodic epidemic was due and did occur, we only had a total of 74,000 in two years, which means, if we go by the corresponding number of 1918, 50,000 lives were saved from one disease alone. That means of course by the time 1931 comes, if we go on preventing these epidemics we are going to have a big increase in population. So that your Tanjore scheme is necessary.

14458. Both irrigation and public health would gradually have a tendency to increase the numbers, unless population were consciously and deliberately controlled?—I think I told the Chairman that in one community, (the educated community) there is control already. That control occurs only among educated communities, and if you spread education and public health among the general population it is bound to follow there also.

14459. *The Chairman:* And to such an extent that the control more than counter-balances the lower death rate as the result of better living?—Probably.

14460. *Dr. Hyder:* You are aware that the French have a system of two children per family. Well, in regard to cholera epidemics, I understand that the research carried on has revealed two things, (1) that cholera follows the monsoon and (2) that every seventh year there is a violent outbreak of cholera?—In the northern areas of the Presidency you get an increase in cholera immediately following the monsoon, but not in the southern areas where it is quite different. It is a very big subject and I cannot go into details; but I have mentioned that in the northern areas the cholera immediately follows the monsoon. I also wish to correct the second statement that cholera comes every seventh year. After a study of the periodicity of cholera in a large number of Provinces, I found a 72-month periodicity. But that is a difficult question to explain; it has happened during the last 35 years in practically every Province, but there is no reason why it should happen in the future. It is an interesting fact, but I do not lay particular stress on it; I do not want to forecast what the future is going to be. We have not sufficient data.

14461. Had this sixth year period any relation to the rainfall?—Sir Leonard Rogers and myself have been working at the question separately during the last three years. Sir Leonard in his last paper says that a certain degree of humidity is associated with a rise in cholera, but he and I are of a somewhat different opinion about that; it remains to be seen which of us is correct.

14462. Would you like to have in the capital of this Presidency a Public Health Museum?—I have got that proposal on paper now. I want a Public Health Institute with a Public Health Museum and a big Public Health Laboratory.

14463. *Dewan Bahadur Raghavayya:* With reference to this question of the latrines in rural areas, you said you were experimenting and in one area some latrines have been put up and are working. May I know the type of latrine? It is not a cemented floor, it is an earthen floor, I suppose?—We have got two or three types that we are experimenting with. We have got, for instance, the latrine built over a septic tank; we have got the latrine built over a pit on the ground; and we have got a latrine with a cemented floor with sand underneath, and with walls round about to keep the pigs out. We are experimenting and trying to find out what is the latrine which is most suitable.

for the population in that area, and the District Board is giving the funds to carry out the experiment.

14464. Do you think a latrine on the dry earth system is at all suitable for your purpose?—You mean by that hand removal and one in which fresh earth is spread; one of the types we build is the dry sand latrine where the sand has to be renewed and the night-soil has to be removed by hand and buried.

14465. I suppose that type will be more popular than the other types because it is more easy of operation in villages?—I find the type for which we have provided a septic tank much more in favour, because there is no hand removal at all.

14466. What is done with this stuff which is deposited in the latrines; is it used as manure?—In the septic tank, bacteriological action takes place, and it dissolves and disappears.

14467. And no attempt is made to use this stuff as manure for the fields? —Not in this type of latrine; but in the Madura Municipality, for instance, which is the only place in the Presidency that does it to my knowledge, the municipal night-soil is carted 2 miles out of the town, and is dumped on to a dumping ground mixed with the street rubbish, and sold to the ryot who bids for it up to Rs. 3 per cart; it is the only place in the Presidency in which I know the ryots use it; the curious thing is that you get the ryot there to bid for it up to as high as Rs. 3 per cart, in other areas you cannot get them to look at it.

14468. You do not think the ryots could be educated to appreciate its use as a manure?—I think they could, but that of course is the duty of the Agricultural Department.

14469. You think if the Agricultural Department could awaken the interest of the ryot in night-soil as something of manurial value, it would facilitate your scheme considerably?—I do not recommend the Madura scheme at all; I think it is a most terribly disgusting scheme; in fact, the first time I visited the area where the mixed stuff is dumped, the whole country-side seemed to me to be black, due to the enormous number of flies that were being produced in this mixing area.

14470. I do not refer particularly to that method?—I say that I would not recommend that method, but certainly the use of night-soil as manure is to be commended.

14471. And the ryots might realise its benefits?—Yes. One of the reasons for experimenting with these latrines is to try and produce a material which would be of use to the cultivator as manure.

14472. You said that the village panchayats could not function properly for want of funds; you are referring to the fact that village panchayats get no subsidies?—I do not know whether they get subsidies or not, but they are very poor.

14473. They are not getting any subsidy from Government?—No.

14474. Do you think that a system of subsidy would be a good thing?—I should think, from the financial point of view, it is an impossible scheme.

14475. It is impossible?—You ought to have thousands of panchayats in the Presidency; I do not see any reasonable expectation of providing subsidies for thousands of panchayats. I think there is far too much done by Government for the ordinary individual in India; everybody looks to Government for everything. I am giving my personal opinion now. I would like to see the ordinary villager do more for himself in the way of economic progress, do more for himself in the way of sanitation, and do more for himself in the way of providing a water-supply. There does not seem to be any reason why the ryots should not co-operate and dig a well for themselves.

14476. You think the village panchayat could function in that direction?—That is one of the ways in which I hope that would be done.

14477. *Professor Gangulee:* Is there any shortage of quinine in the Presidency?—There is a shortage of supply in the world.

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14478. Particularly in this Presidency?—No more than in any other part of the world.

14479. Are you satisfied with the distributing agency?—I am not.

14480. With regard to the cost, you said that it was prohibitive?—Yes.

14481. And I find from the Government Cinchona Factory Report for 1924-25 that this year they made a profit of Rs. 3,28 lakhs?—Yes.

14482. In what way is this profit being utilised?—Naturally the Government sell quinine at the market price, I do not know how the Cinchona Department sells its quinine; even in distributing quinine to another department, they would probably put it down at the market price, I should think; that is the only way in which they could keep accounts.

14483. *The Chairman:* I forgot to ask you whether you associate the practice of keeping animals in the dwelling houses with the high incidence of diseases in the rural population?—That is bound to have a certain effect.

14484. Do you think it is important?—I think in villages it is quite an important thing. If you crowd up the verandah of the hut or the house with cattle, naturally you are going to get far less fresh air in the house than if you had no cattle there.

14485. Are you satisfied that the process of fermentation in the case of night-soil is an absolute guarantee against the substance being a vehicle of disease?—Various experiments have been carried out in connection with the hookworm parasite; I do not think that the hookworm parasite lives very long in well digested septic tank material but there is no doubt that in septic tank systems the cholera bacillus can pass through into the effluent. I mean you get the cholera bacillus in sewage; you put the sewage through the septic tank, pass it through the percolating filters, but the Bacillus Coli and the cholera bacillus may be found still in the effluent.

14486. To that extent the process is not perfect?—It is not perfect from the point of view of prevention of cholera, but the effluent can safely be used for irrigating land, and then the thing is finished. What I deprecate in every case is the discharge of this effluent into a river.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Tuesday, the 23rd November, 1926.

Tuesday, November 23rd, 1926.

MADRAS.

PRESENT:

THE MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.
Sir JAMES MACKENNA, KT., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU.
Rao Bahadur B. MUNISWAMI NAYUDU GARU.
(*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH.
(*Joint Secretaries.*)

Mr. C. T. MULLINGS, Chief Engineer for Irrigation, Madras.

Oral Evidence.

14487. *The Chairman:* Mr. Mullings, you are Chief Engineer for Irrigation for the Presidency of Madras?—Yes.

14488. You have not put in, I think, any note of evidence which you wish to give?—No. I have recently been back from furlough.

14489. Would you like to make any statement of a general character at this stage?—No, I think not. The Secretary, Public Works Department, has put in a statement of every thing that has happened since the time of the Irrigation Commission.

14490. That, I think, arrived last night, did it not?—I am not sure when it was sent.

14491. I, at any rate, have not had an opportunity yet of looking through it. Probably the steps taken on the recommendation of that Commission are too many and too detailed for you to give the Commission now some general indication, of what has occurred?—I think it is about 15 pages or more of detail.*

14492. You divide your irrigation works in this Presidency, I take it, into two categories, productive and non-productive?—Yes.

14493. You do not have an irrigation budget as a whole. Has it occurred to you that if you could take to your credit the income, the result of the productive schemes, then you might with that income be able to finance unproductive schemes to a greater extent than is at present possible?—Yes, certainly.

14494. Would you yourself be in favour of an arrangement of that nature?—Certainly.

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* Not printed. Note on action taken on the recommendation of the Irrigation Commission (1901-03) C. 1851—1854.

14495. Have you ever represented that to Government?—I think we have done so for quite a number of years now, but they like each individual work to be productive on its own.

14496. I do not know whether this has been dealt with in the memorandum that you put in, for, as I say, I have not yet had an opportunity of seeing it. But I understand that you have in your mind some scheme for large protective works in connection with the Deccan rivers, possibly in collaboration with the Presidency of Bombay?—Not in collaboration with Bombay at all.

14497. Then I misunderstood that. Is it quite clear that there is no question of combining with the Presidency of Bombay?—No, on no occasion.

14498. Do you anticipate any conflict of interests between this Presidency and the Presidency of Bombay?—No, none at all.

14499. Do you happen to know whether these schemes have been dealt with in the memorandum?—Yes, they have been; they are mentioned.

14500. How far have these projects proceeded?—We have got out the detailed estimate for the Tungabadhra and Kistna projects, but both of them are almost blocked on account of the difficulties with the Nizam's territory. We should submerge a fair number of villages in each project with a reservoir, and so far no way out has been found with regard to the Nizam's demand that he should get an equal territory for the area submerged, and the Suzerain power has not insisted on it yet.

14501. Are negotiations proceeding with the Nizam's Government?—I do not think so.

14502. What acreage would you command by these schemes?—The Kistna project would cover a little over half a million and the Tungabadhra well over a million.

14503. So that these two schemes together would make a very important contribution to the wealth of the Presidency?—Yes.

14504. Can you say off-hand how much land would in fact be inundated by the schemes?—I could not say, but I should think that about 16 to 20 villages of the Nizam's territory must be submerged for each one.

14505. What other schemes of first class importance have you in view?—The Bhavani Project is a big one; there are alternative schemes for having a dry crop project and a wet crop project. The dry crop project of course would cover a very much larger acreage; that is called the Upper Bhavani project; it would probably, irrigate about 300,000 acres or so.

14506. Are there any other schemes of first class importance?—No, not besides those two. We have one just starting, the Cauvery-Mettur project which would irrigate 301,000 acres of new crops.

14507. What is holding up those schemes?—Financial considerations more than anything else. I think it is because the Agricultural Department is advocating a dry crop scheme and the Revenue Department is revising its figures in regard to revenue; that is the sort of thing.

14508. You say the Agricultural Department is recommending a dry crop scheme?—Yes.

14509. Would you be surprised to learn that the Director of Agriculture has not been consulted about the Bhavani project in any way at all?—I should certainly.

14510. What steps were taken to consult the Agricultural Department in the matter of the Bhavani scheme?—We do not really have any correspondence with the Agricultural Department. The Revenue Department usually does that.

14511. So that perhaps the Director of Agriculture was near the mark when he said that his department had not been consulted?—It may be. The Bhavani project started about 30 years ago; it was before his time.

14512. Is it your view that the touch between the Agricultural Department and your own is sufficiently close?—We have nothing to do with the

revenue and the revenue people discuss that point with the Agricultural Department, I think.

14513. Do you think that is a good arrangement?—I think it could be.

14514. Do you not think that the two technical departments had better consult each other?—Well, we could try but I think the revenue people would cut in.

14515. The Revenue Department is of course a spirit which pervades all other departments?—Yes.

14516. But that is no particular reason why you should not, in technical matters, discuss these questions with the Agricultural Department, is it?—No.

14517. Have you ever in your recollection met the Agricultural Department round a table to discuss any scheme?—I do not think so.

14518. Would you agree with me that every irrigational project presents its agricultural problem?—Yes, certainly.

14519. Are you in charge of the hydro-electric development as well as the irrigation development?—I have just become so, when I came out from Home a fortnight ago; I am afraid I do not know very much about it yet.

14520. Would you agree with me that hydro-electric development is something which requires very careful watching and direction lest an earlier scheme should prejudice ultimate development by the establishment of vested interest?—Yes.

14521. Have you at your disposal the technical advice to which you are entitled, if you are to carry responsibility for hydro-electric development?—We have our agents in England for the electrical side and we do the civil side ourselves.

14522. Do you think the technical aspect of this matter can conveniently be dealt with from Great Britain?—So far it has got on, I think, as well as could be expected. We have not yet seen a report on the first of the projects, the Pykara one; I think one is due three weeks hence; I think it is leaving England this week.

14523. I take it that that report is founded upon the hydro-electric survey already in existence?—Yes.

14524. When was that survey carried out?—During the last two years.

14525. Can you put before the Commission any estimate of the cost of your hydro-electric schemes?—We have got a very fair one now for the Pykara which will be about 5 crores.

14526. The Pykara scheme is the first one which you propose to tackle?—Yes, and it is the largest one.

14527. What was the original estimate for that scheme?—A very sketchy one was made out about a year ago for about 2¾ crores; that was before the electrical people had been able to study the details of their costs.

14528. Was that made in consultation with your hydro-electric engineers in Great Britain?—Yes, by correspondence.

14529. The 2¾ crores estimate?—Yes. And they doubled the cost of the estimate in the transmission line in their second report. That adds nearly a crore straight away.

14530. Would you be inclined to think that a difference of something like 100 per cent between the two estimates within two years is a good advertisement for the system of assessment?—We depended upon our technical advisers for the electrical side; it is that which has been altered; the civil part has not been altered very much.

14531. Are you yourself skilled in hydro-electric matters?—No, not more than what applies to the civil engineering side.

14532. Do you think there is a hope that manufacturing concerns may take the current?—As far as we know the price will be too great near Madras; we shall have to start the power system somewhere in the neighbourhood of Salem, Coimbatore and places like that.

14533. That is what I expected; but do you not think there is hope that factories may spring up in those districts?—I do not see what factories there can be; there is very little except cotton.

14534. You do not see the prospect of the establishment of any industries founded on local raw material?—No, I do not think so.

14535. Have you considered the possibility of selling your power for the purpose of pumping water from tube-wells?—We do not have any tube-wells in this Presidency. I think there are about three all told.

14536. Of lifting water from ordinary wells or channels?—It is possible, but it will certainly not pay.

14537. You are quite convinced of that?—Our Divi engine pumping scheme is one of the biggest in the world; it is only paying 2 per cent and irrigating about 38,000 acres. It has only a lift of about 12½ feet maximum. The wells generally have a bigger lift.

14538. You do not foresee any demand by groups of cultivators for power?—No, I do not think so. It is cheaper for them to use their cattle when not employed for ploughing, for baling water from wells.

14539. At what voltage are you going to supply the current?—I cannot say; I do not think it is defined yet. It will be known in about three weeks.

14540. How long has the Pykara scheme been under consideration?—I should think seriously for about two years.

14541. Now the other four proposals, the Kolab hydro-electric scheme in the Vizagapatam Agency and other schemes, are they formulated at all?—Yes, a certain amount of detail has been obtained, but not very much; Kolab is the only one possible for the development of industries that I know of.

14542. Why?—They have got metals like bauxite and manganese and that sort of thing.

14543. Do you not foresee any demand for power from ginning factories in your cotton districts?—Yes.

14544. But you do not appear to be very hopeful about the financial aspects of the scheme?—Not very; I do not think it will come in for irrigation at all.

14545. Now are these four hydro-electric schemes entirely independent of irrigation?—Yes.

14546. So that your four irrigation schemes, the Cauvery-Mettur, the Polavaram, the Upper Bhavani and the Bellary, have no connection with any hydro-electric plans?—No, none whatever.

14547. A question or two about each of these four. The Cauvery-Mettur Reservoir; when was that first suggested?—A little over 30 years ago.

14548. As a productive or unproductive scheme?—Productive.

14549. So that 30 seasons have passed and you are still examining the financial possibilities?—Oh no, that is finished; it will pay about 7¾ or 7½ per cent and we are starting the work.

14550. That is under way?—Yes, that is under way, just started.

14551. The Polavaram?—That is under way too.

14552. The Upper Bhavani Project is still under consideration, is it not?—That is under consideration I hope with the Agricultural Department, but I do not know.

14553. When do you expect a decision as to the Upper Bhavani Project?—Within a year.

14554. Is that to be a productive scheme?—Yes.

14555. Is the Bellary West Canal Project to be a productive scheme?—It may be.

14556. Has that been fully examined yet?—Yes, very nearly, I think. I do not know whether the Agricultural Department has been consulted about that; but it is only for wet crop irrigation on the Tungabhadra river.

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14557. The total of these schemes will give you an estimated commanded area of over 8 lakhs of acres?—Yes.

14558. When do you expect the Cauvery-Mettur scheme to be completed?—I should think in 7½ years from next March.

14559. And the Polavaram Island project?—By the end of next year.

14560. That is a comparatively small scheme?—Yes, quite small.

14561. And the Bellary scheme may, I suppose, be undertaken in the next few years?—It might be; of course the cheapest way for Government would be to take the plant from the Cauvery-Mettur project and put it on to the Bhavani project which is quite near, and use the same construction plant or a portion of it.

14562. So much for your schemes. You told the Commission that you have practically no tube-wells in the Presidency?—No tube-wells.

14563. You have no geological conditions to call for it; is that the reason?—Yes.

14564. Do you get artesian well water in the Presidency?—Very little; it is generally near the coast.

14565. What borings have you carried out in land?—None. The Industrial Department has a special well-boring staff in Madras, which assists the small cultivator. The Engineers are not concerned with such small schemes.

14566. Have you reason to suppose that there is no artesian water inland?—I rather think the railways have tried in a good number of cases.

14567. You rely upon the Revenue Department for your agricultural information and the Railway Department for your information about artesian wells?—No, it is chiefly geological.

14568. Do you tell the Commission that you have firm reason to suppose that there are no artesian supplies where they would be useful to agriculture?—I should say none.

14569. What are the typical geological conditions in which wells are dug in this Presidency?—There is a great variety, but in the Deccan where you want water most there is always granite underlying the soil at fairly reasonable depths and you very often get brackish water. It is unsuitable for irrigating out of wells of that kind.

14570. The wells there, I suppose, are the deeper wells?—Not very deep; 30 feet would be rather a deep one.

14571. With a bullock power lift?—Yes.

14572. That is one kind of well and have you any wells blasted through rock only?—We very seldom get water; we have tried it often in vain.

14573. Are there any other types that you can describe?—The most common type of well here is only a shallow one in the *ayacut* (*i.e.*, irrigable area) of a tank, which is used at the end of the season when the tank goes dry, to finish the crop.

14574. That is only an expedient for baling out the tank?—It is sub-soil percolation that would probably have been lost otherwise.

14575. But that is what it amounts to?—Yes.

14576. Is your department concerned with assisting cultivators to make or to work wells?—No.

14577. Is your department concerned with assisting cultivators to lift water from channels?—No; they use the ordinary *picotta* without our advice.

14578. You are not concerned with the amount of charge. Have you any views to express as to the practicability of the volumetric basis of charge for water?—It would be a very difficult thing to manage; but it might be reasonable to charge more nearly the market value of water in the form of a water rate.

14579. But do you agree that the volumetric basis of charge is the ideal?—Yes.

14580. Are there any experiments to record?—No; none at present. At present as far as we know wet crops are about the only suitable kind of irrigation here. They are very expensive in water, of course.

14581. How about the question of the amount of water required for cultivation; have you discussed that with the Revenue Department?—No, I do not think so.

14582. What advice do you give to the cultivators in the matter of the quantity of water required for cultivation?—We do not give them any advice. In an anicut system, like Godavari, for instance, we let out a certain amount of water which we know to be suitable for rice and they distribute it among the fields as they choose.

14583. If a cultivator consulted you as to the amount of water required per acre for sugarcane, what would your advice be?—So far I have never been consulted; but we give them about a fifth or sixth of what is required for paddy.

14584. And what would that be per acre?—Of course it is a ten months' crop; it would come to about half of what we give them for paddy.

14585. What do you give them for paddy?—In a tank project we expect to irrigate 5 acres for every million cubic feet stored, *i.e.*, one crop only. In a delta the average supply of water is about 1 million cubic feet to 6 acres of paddy.

14586. But you have not in this Presidency come to the point where you have consulted the Agricultural Department as to the ideal amount of water required for cultivation in relation to the amount demanded by the cultivator? —They always demand more than they get.

14587. That is perhaps because they have not had it explained to them that over-irrigating crops is a vicious practice?—It may be.

14588. Is your department responsible for drainage?—Yes.

14589. In irrigated areas?—Yes; only in irrigated areas.

14590. Have you many instances of waterlogging?—No, very few really. We irrigate lands down to about 1 foot above mean sea level in the deltas and along the coast; those lands are of course always liable to waterlogging and nothing can be done to make certain that they will not be. They must be subject to it. The only place that I know of is the Kurnool-Cuddappah Canal where we tried to irrigate black cotton soil; you get a bit of waterlogging there. I do not know whether the Agricultural Department will ever find a way to irrigate black cotton soil without waterlogging.

14591. Have you any saline lands?—Near the sea a great number, and a few in the Deccan.

14592. Is that the result of over-irrigation?—It might be; I am not sure.

14593. Or the irrigation of unsuitable land?—It might be.

14594. But it is not a burning problem here?—Not at all.

14595. Are you carrying out any irrigation research?—No.

14596. Do you think there is a field for irrigation research?—I think there might be for the Agricultural Department, but not for engineers.

14597. Have you any views as to whether the Government of India might well undertake research into fundamental problems of irrigation?—I have not considered it.

14598. On a point of detail; I see that in the note provided by your department sometime ago, you are considering the possibility of instituting the *kiari* system. Is that in use in this Presidency at all?—You mean the volumetric system?

14599. It is on page 3, paragraph 7 " Minor remedies—Kiaris "; " Apart from the question of charging watercess by volume it may be considered whether some simple measures to minimise waste of water are feasible. In the Punjab a system of *kiaris* is adopted * *." Do not tell us about this if you are not familiar with the point?—No, I am not. The note was supplied by

the Revenue Department *not* by the Public Works Department. The first member of the Board of Revenue visited the Punjab early this year and made these proposals.

14600. *Sir Henry Lawrence:* Could you give us a general idea of the extent to which the Irrigation Department has improved the condition of the ryot in Madras? Your total irrigation capital expenditure is about 12 crores, is it not?—I think it is somewhere about that; I am not certain; I can get it.

14601. And you have got four or five main systems have you not?—Yes. Godavari, Kistna, Cauvery, Pennar and Periyar. I should think they would be called the main ones.

14602. Which is the most recent of these systems?—The Periyar.

14603. That was done 30 years ago?—It was finished just over 30 years ago.

14604. What was the amount of land converted from dry crop to irrigated cultivation there?—The total area it now irrigates is approximately 140,000 acres, but a great deal of that was under tanks, tanks with a very fluctuating supply; I imagine the new area would be somewhere in the neighbourhood of 100,000 acres.

14605. That scheme pays well?—Yes, fairly well; about 7 per cent, I think.

14606. And before that, the next latest scheme of yours was the Cauvery? —No, the Cauvery is the oldest one in the country.

14607. The Godavari?—The Godavari was finished about 1855 or thereabouts, and the Kistna 1860.

14608. So that there has not been any very great increase in irrigation since the Irrigation Commission reported?—No, since the Irrigation Commission I should think only about a quarter of a million acres have been put under irrigation.

14609. Has it been as much as that within the last thirty years?—About that. That is including the Periyar.

14610. But the Periyar was before the Irrigation Commission?—Yes, it was but the development of irrigation has been nearly all since.

14611. And of the schemes that you carried out after and owing to the recommendations of the Irrigation Commission the area of land now irrigated is something under 200,000 acres?—Yes, something under that.

14612. Perhaps not 100,000?—I should think over a 100,000.

14613. And these other schemes have been under consideration for best part of 20 or 30 years?—Yes.

14614. So that it is quite time that some further move was made if it is practical?—Yes, I think the most practical is to charge nearer the market value for water.

14615. Is there a large margin there available?—Very large. I think, generally speaking, we have probably charged something less than a quarter of the value, and I suggest three-fifths would be more reasonable.

14616. Would you put that into rupees?—For the whole Presidency, I suppose one might say the value of water is roughly Rs. 25 an acre.

14617. And what are you charging?—The average for the Godavari delta is Rs. 4-4-0, for the whole delta, according to our Irrigation Report for last year.

14618. And for the latest, the Periyar?—It is Rs. 5-9-0.

14619. Then that leaves a margin of Rs. 20 an acre?—Yes, between the rate charged and the actual value. Of course you could not possibly charge the actual value, because there would then be no incentive to change from dry to wet.

14620. You advocate charging another Rs. 10 an acre?—Somewhere about that.

Mr. C. T. Mullings.

14621. On that basis all the schemes would be productive?—Yes, very remunerative; the Godavari pays 20 per cent now.

14622. Is there any legal obstacle to charging the rates which you think feasible?—I do not know of any; there may be.

14623. There may be?—Yes, I do not know of any.

14624. The matter has not been discussed to your knowledge on that basis?—No.

14625. The decision to charge a lower rate is based on political grounds?—Probably.

14626. Take the Tungabhadra project; where is the proposed site for the dam?—There is a place called Hospet, 35 miles west of Bellary.

14627. Then, you would take your irrigation through the Bellary and Kurnool districts?—Yes, into Anantapur, Cuddappah, and eventually into Nellore. We had to exclude all the black cotton areas because it was believed that they were unirrigable when we made this project 20 years ago.

14628. Have they now been shown to be irrigable by any experiments of the Agricultural Department?—No, not that I know of.

14629. Have you consulted them on that point?—No, because it was laid down in a Government Order issued somewhere about 1906 that it was unirrigable. In reviewing the project Sir John Benton accepted that.

14630. This site at Hospet would flood a certain number of Madras villages?—Yes.

14631. And some in the Nizam's Territory?—All the area on the left bank lies in Nizam's territory. The area submerged would be divided between Madras and Nizam's territory.

14632. It is the Kistna project regarding which there was an *impasse* with the Nizam's Government?—Yes. It is much bigger than the Cauvery project. That is another reason why we took the Cauvery up first. The estimated rate in the Kistna project for water was Rs. 7-8-0 an acre, and it would have paid handsomely if the rate had been under 10 rupees.

14633. What was your dam site for the Kistna?—There are two; one is Sangameshwar near Kurnool; that is a possible site; and another is about 10 miles inside Hyderabad territory up from Bezwada.

14634. Where would your Kistna irrigation go to?—Mostly in the Guntur District; there are some very rich lands there.

14635. At present dry crops?—Yes. at present dry crops, growing cotton, chillies and that sort of thing.

14636. I suppose all the possible sites have been very fully surveyed in the course of these 30 years discussion?—I think there is hardly a site which has not been surveyed; we tried every place.

14637. I am not very clear as to your system of assessment. You levy a considerable rate?—I believe that is the practice nowadays.

14638. Whether the water is taken or not taken?—Yes: it always is taken.

14639. Is there any doubt about that?—As far as I know, none. We have nothing to do with the revenue; we do not really know anything about it; we have not very much to do with the system of assessment.

14640. Who will be able to tell us about that?—Mr. Macmichael.

14641. So that it is not the case as far as you know that anybody is asked to pay for the water who does not in fact take it?—No, I believe not.

14642. *Dewan Bahadur Raghavayya.:* That is in the case of lands registered as dry land?—I am afraid that is a revenue question; I am afraid the engineers do not know about that.

14643. *Sir Henry Lawrence:* Then these two big projects have been postponed, and those are the projects which deal with the areas in this Presidency most subject to famine?—Yes.

14644. The project which you are now taking up is the Cauvery-Mettur project?—Yes.

14645. What districts does that touch?—It would irrigate a small area in Trichinopoly, but most of the land we propose to irrigate is in Tanjore, because we can irrigate a large block there at a very much cheaper rate than in any other district; we pass through Coimbatore, Salem and Trichinopoly; it is possible to irrigate all those.

14646. Where is your dam site?—At a place called Mettur, nearly 40 miles upstream from Erode station on the broad gauge.

14647. You carry the water through Salem?—We just turn it into the river and pick it up again at a place between Trichinopoly and Tanjore, called the Grand Anicut.

14648. That area in Trichinopoly and Tanjore is not liable to famine?—No.

14649. In regard to this hydro-electric scheme, what distance is the current to be taken before it is used; what will be the transmission line?—From Pykara, which is one of the biggest sources of the power, it is going to be brought to Madras, partially for the electrification of the South Indian Railway, and partly for sale to the Municipality.

14650. What is the transmission line?—It is 260 miles or something like that.

14651. Is it through inhabited area, or through forest or desert area?—The first 30 miles are in the hills in the Nilgiris; the rest is fairly open country, some is very open.

14652. You are not likely to be able to dispose of any current in the first 100 miles or so?—Coimbatore is a big cotton centre.

14653. Is it to touch Coimbatore?—It could, yes. It is quite near Coimbatore, Erode and Salem.

14654. I heard at Coimbatore that they were going to be cut out of it?—I do not know. It is very close to them; but they could have their own scheme.

14655. *Sir Ganga Ram:* Are you Chief Engineer for running canals as well as for the new projects?—Yes.

14656. The new projects are also run by you?—Yes, for the moment; there will be a Chief Engineer for the Cauvery-Mettur project, I suppose, very shortly.

14657. That would be put under a separate Chief Engineer?—Yes, that will be.

14658. The Cauvery project is designed for how many cusecs running?—301,000 acres.

14659. How many cusecs?—I am not sure; it varies from month to month.

14660. At the take-off, how many cusecs?—Somewhere about 12,000.

14661. With 12,000 cusecs you will only do 300,000 acres?—No, we have got to supply water for Trichinopoly for irrigation, with some taking-off in South Arcot.

14662. How much will you do with 12,000 cusecs?—It will be about 1,400,000 acres, roughly.*

14663. Have you any principle in these delta areas as to how much quantity of water you should give?—We can tell that perfectly well in the case of the Godavari and Kistna systems, but the Cauvery system has been developed for hundreds of years, we turn the water into the local rivers, and it is picked up in the sluices in the bank and thereafter distributed entirely by the ryots; they have the sluices in their charge.

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* The maximum discharge for irrigation from the proposed reservoir is 20,000 cusecs. Tributaries coming in below the reservoir add to the flow. The total irrigation from the Cauvery below the dam will eventually be 1·4 million acres of which 0·3 million acres will be new irrigation.

14664. In the Godavari delta, how much water do you use; is there any principle by which the quantity of water is estimated for gross irrigated area? —Yes, we know these figures, but I cannot give them off-hand.

14665. Have you not got a regular formula for it?—Yes.

14666. So much gross area for so many cusecs?—We supply that to a duty of 66.

14667. 66 in *rabi* or *kharif*?—66 is for the transplantation period in July-August.

14668. After the rains?—We do not have much rains at that time.

14669. You have got this big scheme of 12½ feet lift; what quantity do you lift?—We lift enough water for this duty of 66, roughly.

14670. What quantity?—36,000 acres are being irrigated now.

14671. I only ask you what quantity you lift; after all you cannot lift as much as you like; you will have to lift only a certain quantity?—Yes, I cannot carry these figures in my head, but if you want them I will give them to you.

Thank you; will you please do so?

14672. What is the cost of lifting?—All these figures are given in the Irrigation Administration Report.

14673. You say it is only paying 2 per cent?—It only pays 2 per cent, with an average water rate of 6½ rupees.

14674. For that you charge only 6½ rupees?—6½ rupees is being charged there on an average, and it pays 2 per cent.

14675. Why should the cost of lifting be so great?—We have to carry the oil from Madras; it is not on the railway. We have some Diesel engines there that cost us Rs. 5 lakhs.

14676. Could you not convert it into steam?—No, it is not nearly as cheap.

14677. Have you not got any falls there?—No, none at all; it is close to the sea; the pumping station is about 18 feet above sea level.

14678. Witnesses have stated before us that you charge a consolidated rate of Rs. 15 on the Godavari delta. Is that right?—I do not know; you will have to ask the Revenue Department. I do not know anything about the Revenue Department; we have nothing to do with it in this Presidency.

14679. In your irrigation scheme do you not keep a capital account separately?—Yes.

14680. How much out of the Rs. 15 goes to your department and how much to the Revenue Department?—That is given in the Annual Irrigation Administration Report every year, and the water rates are put down on page 111. You can see there what portion is charged to irrigation.

14681. Where are these hydro-electric schemes?—The Kolab one is right up in the Agency district of Vizagapatam.

14682. Is it from storage tanks, or what?—There will be a reservoir there.

14683. A reservoir?—Yes.

14684. How much is the fall?—I do not know at all; I have only just taken charge of this about a fortnight ago. I have not had time to read the papers yet; I do not know anything about it.

14685. You are going to take some water from the Cauvery river?—Yes.

14686. The Cauvery passes through Mysore?—Yes.

14687. Has the Mysore State agreed to it?—The agreement was signed in April 1924.

14688. Then hereafter they cannot take any more water from the Cauvery? —They have to give us compensation, if they take more water for irrigation.

14689. But they are upstream, are they not?—Yes.

Mr. C. T. Mullings.

14690. Could you give me more information about these hydro-electric schemes, what their position is and what fall you are calculating on?—Pykara is about 11 miles to the West of Ootacamund.

14691. What is the fall?—I am not sure; it is well over 2,000 feet.

14692. Do you propose to bring that power down to Madras?—It is possible, yes.

14693. I may tell you that the best use of that fall is for lift irrigation?—Very possibly of course it will not pay Government to put up a scheme of that kind.

14694. Why not? You will bring dry land under irrigation; will not that pay?—Where is the water coming from, then?

14695. Is the head work under this Mettur project a reservoir or a weir or what?—It is a big reservoir; it will be the biggest dam in the world.

14696. Have you a weir there? Have you ever seen the Punjab canals?—No, never.

14697. We generally dam it, protect the banks, and put a weir, so that the flood water passes over the weir. Is that the system?—No. There will be 2 weirs at Mettur.

14698. But nothing will pass over the dam?—No.

14699. Then it is not a weir, it is a dam. From what level at the top of the dam do you take the water?—We can take the whole of it if we like; we have a series of sluices right the way down.

14700. What is the minimum from which you take the water?—We take the whole of the water.

14701. What is the height?—It will be about 160 feet of water.

14702. The total depth will be 160 feet?—Yes.

14703. You can create a hydro-electric scheme out of that?—Yes; but then sometimes there would be no head when the reservoir is nearly empty. And you must have a constant flow of water for a hydro-electric scheme.

14704. You want a constant flow for lighting power but not for irrigation?—For power of course; you cannot sell power for a few weeks here and there. But for irrigation we can.

14705. You say that the market value of the water is Rs. 25?—On the average, I should think, throughout the whole Presidency.

14706. Do you charge fluctuating rates on the acreage grown?—I shall have to refer you to the Revenue Department for that; we do not have anything to do with it.

14707. You do not make out the bill for irrigation charges?—No.

I may tell you that this question of the legality of charging more than what they have been privileged to pay was legally tested in the Punjab, and it was found that the vested interests would preclude any change in it; however, I cannot give you the exact information.

14708. You say there will be a hydro-electric scheme in Coimbatore?—Yes.

14709. That will be used for power?—Only for power.

14710. Power for ginning and pressing?—For anything that we can sell it for.

14711. Not for lifting water from wells?—It was not considered; I think we have thought about it, but I am quite sure it is impracticable financially; whether it is worth doing at a loss, I do not know.

14712. You have no system as to how much water you should give per gross area; you say 66?—66 is the utmost quantity we give.

14713. What I mean to say is, supposing one man pays for a duty of 66, do you see that you do not usurp other people's rights by giving him too much water?—No, because in these places near the delta, there is far more water than we can use.

Mr. C. T. Mullings.

14714. Can you not send it somewhere else?—That is what we are trying to do with these Tungabhadra and Kistna projects.

14715. Barring this Divi project, there has not been any attempt made at lift irrigation?—No.

14716. None?—None, except little ones belonging to private owners; there may be about 200 or 300 of them.

14717. Some of the land-owners at Coimbatore told me that they could be connected with the Mettur project if they pay Rs. 30 per acre?—It is quite possible.

14718. Is it right that they have to pay Rs. 30 an acre?—It is possible, yes.

14719. Was Rs. 30 an acre demanded from them?—No, it is only a suggestion; but when we can sell water in Tanjore at Rs. 15 and still have a profit, it seems rather absurd to spend very much more money in order to have to charge Rs. 30 in Coimbatore.

14720. I saw in the papers the other day, I think in the *Madras Mail*, these figures, that the Upper Bhavani was going to irrigate 60,000 acres of first crop and 260,000 acres of second crop. Are these figures correct?—I think very probably yes. That is the dry crop project.

14721. And it is going to cost 488 lakhs, is that so?—I think so.

14722. That would not pay more than Rs. 15 an acre?—I do not suppose so.

14723. And the other scheme, Bellary West Canal project will irrigate 57,000 acres and will cost 90 lakhs? Is that right?—I expect so. I cannot tell you off-hand.

14724. *Sir Thomas Middleton:* You expressed the view that research as to the amount of water required by crops should be made by the Agricultural Department?—I think if anybody does that, it should be done by that department.

14725. You indicated that the amount of water which you would be prepared to allow for sugarcane was 250,000 cubic feet?—A good deal less, I think.

14726. If it were 250,000 that would be about 70 inches of water. It so happens that in another Presidency where both the Irrigation and the Agricultural Departments have conducted researches into this question, the Irrigation Department fixed a figure of 75 inches, but the Agricultural Department fixed it at 120. The question I ask you now is that if the Agricultural Department were to demand 100 inches instead of 70, as a result of their investigations you would be prepared to accept the agricultural figure?—I suppose we should have to.

Then I agree that the research should be conducted by the Agricultural Department.

14727. You express the view that it would not be possible to use electric power for pumping purposes. Your view is no doubt based upon the cost of transforming for small areas?—Yes.

14728. In passing from the source of the power at Pykara to Madras, you have about 220 miles of cable?—More than that, I think.

14729. You could supply considerable towns like Coimbatore or Vellore?—Yes.

14730. Have you made any actual estimate of the demand of current which would be necessary in order to tap the main current and transform down for pumping purposes in particular areas?—Yes, we have taken a preliminary survey as to the probable demands and the probable growth of demands but I cannot tell you anything more. In about three weeks more, we expect to get the final report.

14731. As a result of the preliminary survey you are satisfied that the country districts, apart from the urban districts, would not be able to pay for current?—So far as we know, they could not.

14732. *Dr. Hyder:* On these projects, are you going to keep the charge for water separate from the land revenue assessment?—I must ask you to refer to the Revenue Department all questions of revenue. We have nothing to do with it in Madras.

14733. With regard to the hydro-electric power scheme, do you not think there would be wide scope in this Presidency for the installation of small plants for supplying power to the small saw-mills, cottage industries, ginning presses, etc.?—I think very probably Government will be willing to give some concessions.

14734. What were the objectionable features of the Irrigation Bill which has been reserved by His Excellency the Governor?—I have never read it; I am afraid I do not know anything about it.

14735. Did it not concern your department?—Yes, it did; but we had nothing to do with it. It has been sent to the Irrigation Department, but I have not seen it myself personally.

14736. How are these Irrigation Advisory Boards working, the boards which have been set up in some of these deltaic areas?—I believe they are working very well. We know they are working without any hitch.

14737. *The Raja of Parlakimedi:* Have panchayats been of any help to your department in the distribution of water?—Well, people are much more satisfied where there are panchayats; but I do not think it makes very much difference with regard to the water distribution. Everybody seems to be satisfied that he has a finger in the water distribution; but the result is more or less the same.

14738. So, they have been of some help to your department?—It prevents other people from complaining. That is the chief reason why we like them.

14739. In times of water scarcity have you enlisted the services of the village servants for the proper distribution or have you held them entirely responsible?—In tanks the water regulation is entirely done by the villagers.

14740. Whom do you hold responsible?—We do not take any responsibility for the distribution of water from the tanks.

14741. Suppose they take too much water?—That is their own concern.

14742. You do not reserve any water for the second crop or do any such thing?—No.

14743. Then for irrigation schemes for dry areas, whether paying or not paying, do you not give those your first consideration?—Dry schemes? There has not been one until we got the Upper Bhavani project. Generally, paddy cultivation is done in this part of India.

14744. My question is, would such areas have preference over others?—I should think it would be so, because they use less water.

14745. Is it going to help very many ryots in areas where rainfall is scarce?—Yes.

14746. *Sir James MacKenna:* Your evidence seems to suggest a considerable lack of co-ordination between yourself and the Revenue and Agricultural Departments. As the inter-departmental conference does not seem to be working on a voluntary basis, do you think it would be better to have a development advisory committee, purely advisory, meeting at fairly regular intervals, consisting, in so far as you are concerned, of the Member of the Board of Revenue in charge of Revenue, yourself as the Chief Engineer for Irrigation and the Director of Agriculture, with a view to discussing points on which consultation is necessary, such as complying with anything that agriculture requires, I mean a round table discussion at regular intervals to see which side has been doing what work?—Yes. We are quite ready to comply with anything that the Agricultural Department requires. We merely want the information.

14747. *Professor Ganguli:* Following Sir James MacKenna's question, I should like to know what the function of the Irrigation Advisory Board is?—

There are some in every delta, and really their function is to keep peace in the place.

14748. Who are the members of these Irrigation Advisory Boards?—They are villagers. They live in the *ayacut* or have lands in it.

14749. You have an Irrigation Advisory Board of which the Member of the Board of Revenue is a Member. The report simply refers to the Irrigation Advisory Board, but it does not give us any information as to its function. It says "Irrigation Advisory Board consisting of five members, ... land-holders" and so on. But I do not find any details of this particular Board?—I am not quite sure which Board is being spoken of. There are any number of them in the delta.

14750. You have no Central Provincial Board of that nature?—No.

14751. Are you carrying on any research on the engineering side of Irrigation? I know you do not carry on any on the agricultural side?—I do not think there is any subject on which there is any research at present.

14752. In this note that has been submitted to us, it is said that the ultimate solution of the problem of using water to the best advantage will be found only in the system of charging for water by volume. Are you carrying on any definite experiments to get some solution?—We tried to get some sort of result in certain areas, say in the Mopad project.

14753. So you are carrying on a certain amount of investigation?—Yes.

14754. Is that a productive project or a non-productive one?—It is a non-productive one, in the Nellore district.

14755. In answering the question put by Sir Henry Lawrence, you said that your last irrigation scheme was put into practice really 30 years ago, did you not?—The investigation was started for the Upper Bhavani project more than 30 years ago, I think.

14756. It is the last Irrigation Scheme which you have put into practice? —We have the Cauvery-Mettur Scheme and the Periyar Scheme also.

14757. 30 years ago?—Yes, 30 years ago.

14758. Long before the date of the Irrigation Commission?—Yes.

14759. Therefore, since the recommendations of the Irrigation Commission, no new scheme has been put into operation?—Quite a good number. The Divi pumping project, the Polavaram project, the Nagavalli, the Toludur, the Cauvery-Mettur, etc., all these were started.

14760. Up to say 1925, since the date of the Irrigation Commission which was 1901, you have not started new projects? You started the Cauvery-Mettur, the Polavaram, the Upper Bhavani, etc., only in 1925? All these 25 years no new scheme has been put into operation?—Yes, some were started; the Divi, the Nagavalli, are some of the bigger ones.

14761. With regard to the system of water distribution prevailing in the Godavari and Kistna villages, could you give us some idea as to how that system works?—We get figures for a large number of years and work up the quantity required for any particular month. We fix it in proportion to the level of water and the water is let into the head sluices in that proportion. The maximum quantity of water provided is, roughly one cusec to 66 acres.

14762. Is this supply intermittent or continuous?—It is continuous in the deltas.

14763. You aim at a continuous flow?—Yes.

14764. That is your object?—Yes.

14765. To what extent have you succeeded in realising that object?—In Godavari and Kistna deltas it is continuous.

14766. There is no interference or anything of the kind with your system of continuous flow?—It is not possible. The automatic shutters on the Kistna anicut were altered from 3 feet to 6 feet height in 1925. Slight fluctuation occurred in the Kistna delta before that and it has now ceased.

14767. As regards the Irrigation Panchayats, you say they are not useful to the administration. We have had information that the Forest Panchayats are helpful to the Forest Department; I wonder why the Irrigation Panchayats should not be similarly helpful to the Irrigation Department?—We do not find any real difficulty. The ryots think over their difficulties and by putting them before the Panchayat each man explains to the other his own views and peace generally reigns.

14768. Apart from such advantages, you would agree with me that the Irrigation Panchayat system has a great deal of educational value?—Yes.

14769. Can you give us an idea of the acreage under the tank irrigation? —I cannot, off-hand. I think it is something like 3 million acres.

14770. I think you have a scheme for tank restoration. How is that scheme working?—There are a very large number of tanks in this Presidency in charge of the Revenue Department. Generally speaking, we take charge of those that irrigate 200 acres and more.

14771. The tank irrigation scheme is not under you?—No; the irrigation under tanks is not under us at all. Tank restoration parties work under the Public Works Department. At the 1923 retrenchment the parties were cut down, but there is still ¼th of the Presidency in which work remains to be done. The work has been in hand for over 30 years.

14772. It is under the Revenue Department?—I suppose so; but really under the villagers.

14773. Really under the villagers, under the administration of local bodies? —Yes.

14774. Who finances the local bodies?—We repair the tanks for the Revenue Department for minor works and the Public Works Department for major works.

14775. Under your supervision?—Yes.

14776. *Mr. Calvert:* When we read that the Revenue aspects of a certain project are under examination, under whose examination is it?—Generally speaking the Revenue Department.

14777. The financial aspect is examined by them and not by you?—No, not by us. We make certain recommendations, but that is all.

14778. The assessment and collection is done by the Revenue Department who also deal with the question of remission? You have no voice in that?—No.

14779. Do you not think there is some loss of revenue arising from the fact that the assessment is not done by the agency responsible for the financial aspect?—I always hold that we have not charged nearly enough for water.

14780. But if the assessment were done by your department which is responsible for the financial success, would you not exercise greater care in getting the revenue in?—I should think it is possible; I do not know anything about the system in the Punjab.

14781. We are told that leading landholders are put on the Irrigation Advisory Boards. Do the landholders who lead in agriculture also lead in the economic use of water?—I do not remember what Advisory Boards are referred to; there are some special ones.

14782. In the villages?—I imagine they lead in the area irrigated really.

14783. They do not lead from your point of view?—Not necessarily.

14784. In this Presidency the charge for water is levied out of the profits of ownership and the occupier of the land, the man who uses the water, pays nothing for it. Does that strike you as a logical way of doing things?—I do not know; it is a revenue question; I have never considered it.

14785. Do you not think that the man who uses the water should pay for it?—It sounds well.

14786. You will probably get a higher revenue if the man who uses the water pays for it and if he pays for it he will probably make a better use of it?—Yes.

14787. What is the objection to making the actual user of the water pay for it?—I do not know how the Revenue Department arranges these matters; we have nothing to do with them; we only do the engineering.

14788. The figures supplied, speaking roughly, suggest that the old productive works work out at a capital cost of Rs. 19 per acre irrigated?—Some of them, yes; that is about the price of the Godavari delta.

14789. And for these new schemes which have been discussed the capital cost will work out at Rs. 100 to 180 per acre irrigated?—Some unfortunate ones cost Rs. 667 an acre and pay a return of 0·16 per cent.

14790. Then the revenue works out roughly at about Rs. 5 to 6 per acre on the figures supplied? And the cost of maintenance of the staff is about 1·5 per acre?—Yes, somewhere about that.

14791. When we are told that productive works yield 11 per cent, does that 11 per cent. include or exclude interest charges?—It includes them.

14792. Out of that 11 per cent the interest charges have to be first met before you get anything under profit?—Yes.

14793. So this difference between the capital cost per acre irrigated by new and old works will involve a very big difference in the interest charges per acre?—Yes.

14794. The old works come to about Rs. 19 and the new ones to Rs. 100 or Rs. 180 or even more, so that the interest charges on the capital cost per acre irrigated will be higher in the new schemes?—Yes.

14795. *The Chairman:* What do you estimate as the increase in the cost of construction of these new works?—75 per cent.

14796. *Mr. Calvert:* You told us that you estimated the value of the water at about Rs. 25 per acre. Have you worked out the cost of irrigation from wells per acre?—No, we have nothing to do with that. The Revenue Department look after that.

14797. You have no rough idea as to what the cultivator has to pay?—No. The biggest we have is the Divi pumping project and we only get 1 to 2 per cent. The smaller schemes must be paying far less.

14798. About Rs. 25 an acre?—Yes; it might be.

14799. On your unproductive works are the interest charges accumulated and debited to the work and not written off to famine funds?—Yes; all the accounts figures are to be found in the annual Administration Report of the Irrigation Branch of the Public Works Department; you will find them in that Report, page 73, the total sum charged and so on.

14800. You told one of my colleagues that you are carrying on no research into the water question?—Practically nothing; no.

14801. Does that mean that the Irrigation Department is not interested in such questions as the movements of water in sub-soil by leakage?—You get very little of that in this Presidency as compared with the Punjab. There is hardly any leakage.

14802. Practically no wastage?—Hardly any; the sub-soil water table is so high.

14803. It is not a very burning question?—No; it never has been a question here.

14804. *Mr. Kamat:* With regard to the minimum quantity of water required for growing sugarcane, you say that you have found in this Presidency 70 inches to be the average?—I do not know really; we do not measure it at all; it is only more or less a guess from what I know of the facts.

Mr. C. T. Mullings.

14805. So it was purely a guess and no experiments have been made?—No experiments have been made in the Public Works Department.*

14806. Were any experiments made by the Agricultural Department?—I do not know. I believe they made lots of experiments on cotton and sugarcane in connection with the quantity, but I do not know much about it.

14807. Did they ever write to your department about the minimum quantity of water required for growing sugarcane?—I do not remember having got the information; I do not know.

14808. *Sir Henry Lawrence:* What do you consider a reasonable capital outlay per acre of irrigated area?—I should say if you charged somewhere in the neighbourhood of Rs. 15 per acre for water, Rs. 200 to 250 an acre would not be unreasonable.

14809. *Mr. Calvert:* Capital cost of the improvement?—Capital cost of the new works.

14810. *Sir Henry Lawrence:* That is assuming you get Rs. 15 per acre?—Yes.

14811. But the amount ordinarily charged now does not exceed this on the new projects?—No. We are putting Rs. 15 on the Cauvery project; that is the first time we have put anything approaching the value of water as an assessment.

14812. And has there been any enquiry made whether the ryots would pay Rs. 15?—Wherever I have asked them they said they would pay up to Rs. 20 and were willing to pay.

14813. You have made enquiries?—Yes, in the Kistna project a long while before the War. The actual assessment put in for the project was Rs. 7-8-0 and it did not quite pay.

14814. Where is this dam on the Kistna? At Sangameswaram?—That is one of them; the other one is about 55 miles upstream from Bezwada.

14815. Sangameswaram is the dam above the junction of Tungabhadra and Kistna?—I think so; I was on the other project, on the lower one; so I know all about that one.

14816. Is there any doubt whether the water available for these two projects would be sufficient for both?—The Tungabhadra and the Kistna.

14817. The water supply for the Tungabhadra would not cut off the water supply for the Kistna project?—No.

14818. That is quite certain?—It is entirely independent.

14819. You mentioned that 20 years ago the Government of Madras came to the conclusion that black soil could not be irrigated. That was one of the reasons for abandoning some of the projects?—We did not actually abandon the Tungabhadra. We tried to bring it through lands that were not black; that concerned only two-fifths of the area.

14820. That was the decision taken in 1906?—Somewhere about that time.

14821. At that time was the Agricultural Department functioning?—I do not know; it was not functioning very obviously, I think.

14822. Would you be surprised to hear that the Agricultural Department considers that black soil land can be irrigated?—Quite.

14823. You would be surprised?—Yes.

14824. I am told that they are prepared, on the results of their recent experiments, to show you that it is possible to work that same land, so that the objection to the Tungabhadra project would disappear?—Then we can probably reduce its cost by about 50 per cent; it will take the canals through hundreds of miles of fertile land.

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* A field of sugarcane is only an incident in a surrounding of paddy land and would not have its supply specially measured. There are no large blocks of sugarcane crop where measurements would be possible.

14825. Do you not think it will be reasonable to consult the Agricultural Department now on its further experience?—There is much waterlogging on black soil in Kurnool and Cuddappah.

14826. I think it would be a good thing to consult the department?—Yes.

14827. *The Raja of Parlakimedi:* Can you tell the Commission what is the area under second crop irrigated by canals and tanks?—No; I am afraid not. You may find it probably in the revenue reports.

14828. What are the irrigation charges levied under first class sources?—It varies according to the soil. The Revenue Department is concerned with it; we do not have anything to do with the revenue.

14829. You do not fix the rates at all?—Not at all.

14830. How do you prepare a scheme?—We have a revenue officer on special duty to advise the rates that should be put on when we draw up the estimates.

14831. *Sir Ganga Ram:* Who is the final authority to pass these projects technically? Are you the final authority?—There is the Inspector General of Irrigation at Delhi.

14832. Who passes the technical side of these projects costing crores?—I do not know.

14833. Do you know whether the Secretary of State asks any Consulting Engineer about it?—No, they could not give any useful information.

14834. Have they abolished that system?—I do not know if ever there was one. In the case of the Kistna and Tungabhadra projects no Engineers in London were consulted.

14835. Barring Mr. Harris, no one was consulted?—Sir John Benton came down here and he was consulted.

14836. How much water do you lose from the canal head to the field by absorption and evaporation?—In the delta irrigation not more than 5 per cent. In the Punjab it is somewhere about 60 and 70 per cent.

14837. It is 60 per cent?—We do not get any such loss.

14838. *The Chairman:* The humidity of the air prevents evaporation?—Yes.

14839. *Sir Ganga Ram:* That is only evaporation. In the tanks how much do you lose?—Between 6 and 7 feet a year, by evaporation.

14840. Our experience is one-eighth of an inch per day. Have you made any research as to what proportion of water is required for each crop, *cholam*, paddy, etc.?—We grow paddy, we have only wet crops; no *cholam* is grown in the delta.

14841. No other crops?—There are other crops but they are insignificant when compared with paddy.

14842. Have you carried on any research as to what proportion is required for each crop?—We know what is required for paddy.

14843. That is all you know; you know nothing about other crops?—No, because there is practically no other crop.

14844. *Professor Gangulee:* Do you undertake soil surveys of the area which you propose to serve by a project?—The soil survey is undertaken by the Revenue Department.

14845. Not by you?—Not by the engineers.

14846. *Sir Ganga Ram:* Could you give us the cost of the Divi scheme; what would it cost you to dam the water?—The capital cost is 23 lakhs of rupees; maintenance is Rs. 5 an acre.

14847. I only want to know the recurring cost?—Maintenance is Rs. 5 an acre; I think there are about 36,000 acres.

I want to know why it is so expensive; it is nothing like that in the Punjab.

14848. *The Chairman:* Is evaporation an important source of loss in your canals?—Not in the canals; in the tanks of course it is very great.

14849. Does the rate of evaporation vary with the humidity of the air?—We do not know that, but we do know that it is a little over 6 feet in the year.

14850. You do not regard evaporation as a fixed quantity?—It is very nearly fixed. It is between 6 and 7 feet anywhere in this Presidency.

14851. Have you any experience of co-operative clearing of silt from the minor channels by ryots?—No; I think not.

14852. You do not know of any co-operative organisation directed to clearing silt?—No.

14853. *The Raja of Parlakimedi:* Is it done entirely by the department?—We have a short closure of channels, and we cannot leave it to persons who might be keen on a profit.

14854. They have to depend entirely on Government?—Yes.

14855. *The Chairman:* You call the Upper Bhavani scheme a dry scheme?—The Upper Bhavani scheme is a dry scheme.

14856 Is it the first dry scheme that you have had in the Presidency?—Yes.

14857. Have you or any officer of your department investigated dry schemes elsewhere in India?—I believe the senior member of the Board of Revenue went to the Punjab especially for the purpose.

14858. Not to examine the technical side?—No; the financial side.

14859. What about the technical side?—No one has been sent yet.

14860. Would it not be useful for them to send one?—I think it might be done.

(The witness withdrew.)

Dr. P. SUBBARAYAN, M. L. C., Zamindar of Kumaramangalam, Madras.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(*a*) I think there ought to be a Central Research Bureau under the control of the Government of India which would deal with crops which are common to all Provinces, as that would go to conservation of energy, and will also be cheaper than having research in each Province. But with regard to crops which are special to each Province the research ought to be by provincial experts as under such circumstances it will be impossible for the central body to apply itself to such matter.

The condition of the Indian farmer is such that I think there ought to be an attempt into finding the value of traditional methods of agriculture and of the advantages of indigenous theories. The Indian farmer as is the case with farmers of all countries is extremely conservative, and even more so than in other countries and is slow to assimilate new methods, and so if some method which would combine both the modern scientific and the indigenous method could be found it will be a great advantage to the progress of agriculture.

(*b*) I do not think there has been sufficient progress in the matter of introduction of improved cotton such as Cambodia, and I think an attempt ought to be made to educate the ordinary farmer about the advantages of this variety of cotton over the indigenous variety. I know attempts have been made to do this, but I think there ought to be a greater stimulus given to this.

(*c*) I do not think the Agricultural Department has paid sufficient attention to lift irrigation which is what the farmer in my parts greatly depends upon, and I think an investigation which would go to make it more scientific will be of great advantage.

QUESTION 2.—AGRICULTURAL EDUCATION.—(*i*) I do not think that enough institutions or teachers for agricultural education exist at present. But this is really due to the apathy of the farmers themselves who owing to lack of education are not able to take advantage of agricultural education. The present schools and the College at Coimbatore draw their pupils from the middle classes and the pupils of these schools and college are after the completion of their education largely drafted into Government service.

(*ii*) From what I have said above it will be seen there is no such necessity till the farmer classes have at least become acquainted with the three R's.

(*iii*) I think it would be best for them to be drawn from the agricultural classes because they would be able to really understand the wants and enter into the psychology of the class they come from.

(*iv*) This question has been partly answered by my answer to the first question. In the present circumstances, I think the attendance is as satisfactory as can be got because the pupils really look to being Demonstrators under Government employ.

(*v*) As stated above the main incentive in this Province to study agriculture is Government employment, and pupils who enter agricultural schools are those who have been failures in other walks of life.

(*vi*) As far as I know the pupils are not drawn from the agricultural classes, but from the urban classes whose main object is Government employment.

(*viii*) (*a*) There has been an improvement in this respect and I find that nature study is made a compulsory subject now in elementary classes, and generally pupils are taught to observe for themselves which is as it should be.

(*b*) As far as I know there is no such system by which pupils in schools have plots of their own for learning elementary principles of agriculture. I think it would be a very good thing to have such a system of plots as it would give an agricultural bias to elementary education which will be a very good thing in a country like India which is mainly dependent on agriculture.

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(c) I do not think this will be a very good thing, as I think a good elementary education is necessary before a boy could be taught advanced methods of agriculture, and school farms will only be necessary for that purpose, so while advocating school plots I am against school farms.

(ix) As I have said above majority of the students who have studied agriculture in this Province are absorbed into Government service.

(x) I think it will be best if middle class students who pass out of Government schools and colleges of agriculture are encouraged to take up farming as their profession. This could be done if Government will give them *darkhast* of lands, and landholders also encourage them by giving gift of waste lands at nominal rents to begin with.

(xi) As far as I am aware there has been no attempt in this Province in this direction.

(xii) This as I have said before is a great want and I think a system of part-time schools, and night schools might solve this problem. It really requires a band of educated youths who will devote their time for this purpose, of real social amelioration.

(xiii) (a) I think it is time that a system of compulsory education was introduced, because as I have said above, if the farmer is to gain any advantage from modern methods of agriculture he must first of all be educated, and this can only be done by compulsion. The Elementary Education Act in this Province empowers local bodies to levy a cess, and to introduce compulsion but it has been a dead letter as few local bodies have adopted compulsion. The Province is so vast, and the population being distributed in small villages it is not an easy proposition to introduce compulsion but I think the time has come when some attempt ought to be made, and this can I think only be done by Government agency, as local bodies are apathetic. People in this country have become accustomed to be spoon-fed on all matters by the Government and so in this matter the initiative must come from the Government.

(b) In the matter of finance, the Government as I have said above, already possess the power to levy an education cess and I think it is but right that the Government should spend more money on rural education as most of the provincial revenue arises out of taxes paid by the rural population which has too long been applied to the benefit of the urban population, and it is time the Government thought a little of the rural folk.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(a) In this Province demonstrations by Agricultural Department employees have been successful in instilling into the farmers, the advantages of improved methods of cultivation. The demonstration farms of the Government have not been so much of a success because there are too few of them, and besides the cultivators have not the capital to copy methods which have proved successful in these farms.

(b) I think there ought to be more Demonstrators who could go round and influence the ryots by personal talks, and by showing them the practical effects of adopting improved methods. It will be better if the Demonstrators are drawn from the class to which the cultivators belong.

(c) As I have suggested above if the Demonstrators come of the class to which the cultivators belong I think it will instil more confidence in them and they may be induced to adopt methods suggested by such Demonstrators.

(d) In this Province the single seedling system of paddy cultivation has been successful and many ryots have adopted the system because it has been demonstrated to them that the yield is greater when this system is followed. The use of improved ploughs on the other hand has not caught on with the ryots, because they have not understood the advantages conferred by the use of such ploughs, nor have they the capital to use them because such ploughs require bigger draft cattle, and the cultivators have not the wherewithal to purchase such cattle.

QUESTION 4.—ADMINISTRATION.—(a) As I have stated in my answer to question 1, I think there ought to be a Central Research Bureau, which would

be able to undertake experiments in matters that are common to all Provinces and thereby avoid duplication of work. I know there is a Central Board of Agriculture, but I think the Provinces are suspicious of interference by the Central Government as there is gradually growing a feeling of provincialism in India which has been accelerated by the Montague-Chelmsford Reforms. Inspite of this I think the Provinces realise the importance of a Central Institute like the one at Pusa and the one for veterinary research at Muktesar, and these institutions are certainly being taken advantage of for training advanced students of this Province. I think there ought to be frequent meetings of the provincial heads of the departments concerned with the Agricultural Adviser of the Central Government which would certainly facilitate co-ordination of work.

(*b*) Yes, I think it would be cheaper and better if there be a central staff of experts under the Government of India who would be able to work out problems that are common to all Provinces. I think such is the idea behind the Institutes at Pusa and at Muktesar. I think such staff of experts could be lent to the Provinces for carrying out any special experiments that may be of peculiar interest to a Province and not of all-India interest. To give an example, improved irrigational facilities is a matter which is necessarily a subject common to all India, and it will be best if the staff of experts in this matter is an all-India one who could go round to Provinces who require their help and advise the Provincial Government about the best way in which the natural waters that are in existence may be harnessed to the advantage of the agricultural population of the Province. Such experts must be naturally under the control of the Central Government, but when their services are lent to a Province as suggested above they ought then to act under the direct supervision of the Head of the department of the Provincial Government concerned with the experiment.

(*c*) (*i*) As things stand at present I think the services concerned are doing their best to be of use to the cultivators but I think there ought to be an increased staff in both departments if they are to prove useful to the development of agriculture in the Province.

(*ii*) I am not sufficiently acquainted with transport facilities to effectively answer this question, but I know the existing railways are not enough for the transport of agricultural produce, as they serve urban commercial interests rather than rural agricultural interests. India being a vast country with a narrow sea belt, except for purposes of export, I do not think steamers play an important part in the matter of transport.

(*iii*) In the matter of roads, although the rural classes pay a large amount of cess to local bodies, I do not think that facilities to the advantage of the agricultural classes are being afforded in sufficient compensation to the cess they pay, and from experience of roads in my own district I think a sustained effort ought to be made to give every village in the Province a road which will connect with the trunk road. I think there ought to be a Road Board as in England which will see that effective communications are provided to serve the interests of the rural population.

(*iv*) I do not think the Meteorological Department is of any use to the agriculturist not because of its defect, but because the agriculturist is not educated enough to take advantage of the information given by the department, and its usefulness to the agriculturist will grow with the increase of facilities of education.

(*v*) Here again the Postal Department is not of much use to the agriculturist, because he is not able to write himself, but through the village scribe. More use is being made of this department by the villagers who are thus coming into touch with the outside world.

(*vi*) Telegraphs and wireless I am afraid are not of much use to the rural population, and it is looked on by them as a wonderful thing to be used only by the rich, though with the growth of education they will begin to see the use of these for the marketing of their produce.

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QUESTION 5.—FINANCE.—(*a*) I am afraid at present as far as this Province is concerned cultivators are very much in the hands of moneylenders and from my personal knowledge I can state that in the case of some of the ryots most of their crop yield goes to pay merely the interest on the advances they have taken from such moneylenders. So there ought to be a system by which easy credit could be obtained for purposes of agriculture. I think this can only be done by means of co-operative credit. A system which will be analogous to the methods followed by the Irish Agricultural Organisation Society will be the best thing for this Province for both short and long term credits.

(*b*) At present the system of *taccavi* is a source of corruption among the subordinate officials. Some of these extract more than 25 per cent. of the advances. To get rid of this corruption I suggest that the advances ought to be paid direct to the borrowers by the Revenue Divisional Officers.

In respect of advances for well sinking the estimates are generally prepared according to the schedule of rates maintained in offices. The estimated amount according to such schedule comes very high and generally the applications are rejected on the ground that the security offered is not sufficient for the advance. It will be better if the estimates are prepared according to rates prevalent in the neighbourhood. I also suggest that there should be a committee of non-officials to fix the value of lands to be improved, as they would have a better knowledge of the saleable value of the lands to be improved.

At present the advances are payable in two or more instalments which makes the farmers generally decline to have recourse to *taccavi* loans. I think there is no reason why the full amount should not be paid at once, when the officers are satisfied that the security offered is sufficient.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (*i*) Usually in the villages in this Province the main cause of borrowing by cultivator is for the purposes of marriages and feasts at which the agriculturist is apt to spend more than he can afford. But he also borrows for the purposes of buying seed, draught cattle and agricultural implements.

(*ii*) The usual source of credit is the village moneylender whose rate of interest is abnormally high. With the growth of co-operative credit, the villagers are slowly learning that they could borrow at a cheaper rate of interest from such societies.

(*iii*) The cultivator finds it hard to pay because he has borrowed more than he can afford to borrow for economical purposes, and also from rapacious moneylenders whose rate of interest is such that the income is hardly enough to pay it: beside he is so poor, and his margin of saving is so limited that he never saves enough to be able to repay any portion of the capital.

(*b*) I think it best that a law ought to be passed by which the rate of interest could be kept down and the measure ought to be of a more stringent character than the present Usurious Loans Act. I think there ought also to be a measure by which the farmer could redeem mortgages and for this purpose co-operative credit will again be useful.

(*c*) It would be a very good thing if the free right of alienation could be taken away from farmers as then the temptation to borrow for purposes of marriage, etc., will be less. He ought certainly be restrained from mortgaging or selling his property for uneconomic purposes, such as borrowing for marriages and feasts. I think the system of non-terminable mortgages ought certainly be prohibited because that does not really conduce to the advancement of agriculture.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) I think a legislative measure ought to be adopted by which division of landed property could be stopped. It certainly does detract from applying improved methods of agriculture,as it would be well-nigh impossible to adopt new methods in very small holdings. The objection may be that this suggestion cuts against the Hindu Law of succession, but some system ought to be devised by which the income and not the land could be divided. Co-operative holding of land might prevent excessive sub-division of land.

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(b) The tendency of partition among small farmers is very great, and generally after the death of a father his sons prefer to divide and live separately each having his small holding. Rarely if ever is there a tendency to combine holdings. This can only be overcome by co-operative method of farming by which profits and not land need be divided.

(c) I think legislation is necessary to deal with the property of minors, so that their guardians might borrow in order that their lands could be put to proper use during their minority and improvements effected. The same facilities of borrowing for purposes of improvement ought also be given to widows with life interests, and to persons in charge of property belonging to persons legally incapable. I think it will be best if disputes with regard to division among brothers could be kept out of court and settled by means of arbitration as this method does lead to a lot of waste of money which often results in the loss of the holding itself. Generally I would advocate the method of arbitration in all such disputes as in a poor country like India litigation is too costly and the land will be better if it could be freed from the gamble of litigation, and money be saved to the farmer, which would be well applied to improve the methods of cultivation and the holding itself.

QUESTION 8.—IRRIGATION.—(a) I would suggest that the district of Salem ought to be brought under the Mettur project, as originally the district was included under the scheme and though I am not an expert I have been assured by experts that it is possible for Salem to benefit by the scheme, and as the district is known for its bad seasons it will be a great boon if the water of the Cauvery which runs through part of the district could be harnessed for the benefit of the people.

(i) Yes. The Mettur scheme will lead to a perennial canal.

(ii) There are quite a number of tanks in the district, but they depend so much upon the rainfall which has been a failure during the last five years.

(iii) The same remarks in the answer above applies to this system of irrigation, because here again the sufficiency of water in the wells depends so much on the rains. When the rainfall has been normal in the Salem district both tank and well irrigation has been of immense value to the cultivator, but in seasons of scarcity this source of irrigation fails. Some system ought to be devised by which at least well irrigation could be made independent by deepening of wells, which might make the springs more active, and for this financial assistance will be necessary.

(b) I think there ought to be co-operation between the Agricultural and Irrigation Departments in the matter of supply of canal water: because then alone can a cultivator get sufficient water for his crop. I am not acquainted with canal irrigation to make any suggestions under other heads.

QUESTION 9.—SOILS.—(c) There are large tracts of land covered with prickly pears and these lands can be given to tenants assessment free so that they could clear it of prickly pears and so reclaim the land and make it useful for agricultural purposes.

QUESTION 10.—FERTILISERS.—(a) On the whole I think the Indian cultivator is sufficiently acquainted with the use of natural manures, but he has hardly any knowledge of artificial fertilisers. I think there ought to be demonstrations showing the value of applications of artificial manures. I do not think sufficient attempts have been made in this direction.

(e) I do not think there has been sufficient investigations on these heads in our Province.

(f) Cowdung is a good natural manure and the cultivator knows it very well, but it is largely used as fuel in towns. I think this ought to be prevented by making it penal to use cowdung as fuel. If that is not possible then the Agricultural Department ought to make the people understand what a valuable manure cowdung is and other substitutes for cowdung as fuel ought to be made easily available so that the temptation to use cowdung as fuel could be avoided.

QUESTION 14.—IMPLEMENTS.—(a) I think an attempt ought to be made to devise agricultural implements of an improved type which will be accessible to

the farmer at a price cheaper than what he can get them at. To give an example, no farmer in my district uses an improved plough, because he tells me that the price is beyond what he can pay. The holdings are so small that they cannot use machinery like steam ploughs, threshers, etc. If holdings could be consolidated and run on co-operative basis, then it would be possible for such societies to buy and use improved and new machinery for the purpose of cultivation.

(*b*) As I have said above it will only be possible for the cultivator to use machinery and improved implements, when the holdings have been consolidated and agriculture is run on co-operative lines, or when some system is devised by which fragmentation of holding is stopped and land is kept in large plots in one hand then it will be a paying proposition to the holder to use machinery and improved implements.

(*c*) I know of no such difficulties.

QUESTION 15.—VETERINARY.—(*a*) I think it should be independent but there ought to be some system of co-ordination between the two departments.

(*b*) (*i*) I think here dispensaries are under local bodies, and I think on the whole they are doing their work effectively.

(*ii*) Dispensaries are only established in places where they get a special Government grant, and as far as I know the Government in recent years have done all they can to increase the number of dispensaries.

(*iii*) I think it will be better if these dispensaries are transferred to the Provincial Government; as I feel as they finance most of them they must possess a real control over them.

(*c*) (*i*) I do not think the agriculturists make as much use of the dispensaries as they ought to and this is really due to want of education. When that is remedied they will then be in a position to take advantage of such dispensaries.

(*ii*) The remarks to (*i*) above appply with equal force.

(*d*) I am afraid the farmers understand very little about contagion. I think legislation on the question of notification, segregation and destruction of carcasses is very necessary if diseases are to be prevented from spreading by means of contagion. Existing conditions I think can be improved if the farmer by means of lectures and cinemas be taught the dangers that are prevalent by the spread of contagion.

(*g*) Yes. I think there is room for research into further diseases as affecting cattle.

(*i*) and (*ii*) I think this ought to be done by the expansion of the Muktesar Institute as that would conduce to conservation of energy rather than by provincial agency.

(*h*) (*i*) and (*ii*) I think special researches should be conducted by the officers of the Muktesar Institute.

(*i*) I am in favour of the appointment of a special Veterinary Officer with the Government of India, as he will be useful in co-ordinating provincial work.

QUESTION 16.—ANIMAL HUSBANDRY.—(*a*) (*i*) I think there ought to be a more sustained effort at the improvement of the breeds of livestock as I feel the efforts so far made have not met with great success, and neither have the ordinary breeders been made acquainted with the advantages of possessing improved cattle. I know in the case of the *Pattagar* of Palayakottai that he has done the best in this Province towards the improvement of livestock. Even he felt it very difficult to maintain his cattle last year owing to the scarcity of fodder and so it is best that some system ought to be found by which fodder could be made plenty in times of distress.

(*ii*) In this Province there is no dairying industry worth the name although I think there is a large scope for it. The Government of this Province I know have an intention of making dairying popular, by having a extensive dairying business in their farm at Hosur and supplying milk to all hospitals at Madras. I do not know how far this experiment has been advanced. Here again the *Pattagar* mentioned above has tried his hard but not with much success.

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(*iii*) I think people must be taught to get rid of cattle that have had their use. The stock would certainly become better if useless cattle were destroyed.

(*c*) In the Salem district there is generally a fodder shortage in the months of July, August, September and October. But for the last three years owing to the failure of rain there has been a fodder shortage for a much longer time. The cattle because of this prolonged shortage have almost ceased to exist and farmers are selling them at present at very nominal prices.

(*e*) I think if cattle-breeding is popularised, and the larger landholders come to realise what a profitable concern that would be, it would act as a stimulus towards getting a better stock of cattle and when they take interest in this they would naturally try to solve the problem of fodder as well.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) I think on an average in my district a cultivator has work in his land for about 9 months in the year. As there are some ginning factories near by some of them seek employment in them during the slack season, but the majority of them are idle and do nothing for most of the time. Some of them use their cattle which are now not used for agricultural operations to ply carts for hire carrying their own produce which has been bought by merchants, to the nearest railway station.

(*b*) I think it will be a very good thing if any subsidiary industry is found which could be easily run hand in hand with the main industry of agriculture as it would go to add to the prosperity of the cultivator who would become thereby able to apply more capital to his land. I think hand-spinning is an industry which could easily be made a subsidiary industry because the agriculturists in my part of the world did follow this as subsidiary occupation in the old days, and it only disappeared with the coming of mill yarn. But now this has been revived in a village three miles from me and the people are taking to it with avidity and it has been a means of keeping the cultivators from emigrating because of the unfavourable season, and the yarn so made by the people round has been woven into cloth by the weavers round about the village itself who are also part-time cultivators. Some of the agriculturists themselves have been taught to weave the yarn made by their women folk into cloth. I think this form of industry ought to be widely encouraged by the Government as it gives a real subsidiary employment to the women folk.

(*c*) There is not much scope for bee-keeping in India, but poultry-rearing is certainly an occupation which will be of use to the farmer, but the breed of poultry ought to be improved before it becomes a paying proposition. Fruit-growing might also be tried, specially mango, which will be a paying proposition in my district. There is a large trade in bananas, and in the Namakkal taluk of my district there is a particular class of agriculturists who devote their time wholly to the cultivation of bananas. I think there ought to be a more widespread experiment in the matter of fruit growing. Rope-making and basket-making is being followed as a subsidiary industry in my district, but is not as widespread as it ought to be. There is not much scope for sericulture in my Province, but in the Kollegal taluk of the Coimbatore district there is quite an amount of work in this direction. I think pisciculture will be an industry in places where there are large tanks, but where we have to depend on rainfall as in my district it will not be a great success. There is no scope for pisciculture in my district.

(*d*) I think it will be to the advantage of the small farmer if the Government should establish industries connected with the preparation of agricultural produce for consumption on a small scale. Suitable ones will be cotton-ginning and oil-pressing in my district which has a good area both under cotton and ground-nut.

(*e*) I am not in favour of encouraging the removal of industrial concerns to rural areas, as it is not right to draw the agricultural labour into large scale industries, and there is really no scope in this Province for the establishment of such industries. I am more in favour of establishment of industries referred to in (*d*) above on a small scale, which will give employment to the cultivator in his spare time.

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(*f*) I think the Industrial Department ought to make an intensive study of these matters so that improved methods may make things more happy for the cultivator.

(*g*) I think most of the things that will be of help to the rural population has been touched upon in answer to this question.

(*h*) On the whole the villager has a very crude notion about health and sanitary arrangements. It will be a very good thing if by popular lectures and cinemas he is taught the advantages of health and sanitation and he himself is made to take an interest in such affairs so that of his own accord he might use some of his spare time for this purpose.

QUESTION 18.—AGRICULTURAL LABOUR.—(*a*) (*i*) Indian labour is not as immobile as it was sometime ago, because there has been quite a number of people from my district who have emigrated to Ceylon and the Malay States, and if only there is sufficient propaganda, and attractive terms offered, they will certainly prefer to stay at home. But in my own district I have never heard of any shortage of labour.

(*ii*) As far as I know there is very little uncultivated lands in my district but here again propaganda and attractive terms such as allotment of such uncultivated land will certainly attract labour.

(*b*) As far as my experience of the Salem district goes there is no such shortage of labour.

(*c*) As I have said in answer to (*a*) (*i*) above, I think free allotment of land, will go to the settlement of landless labourers on such land, and I think when such allotment of land is made, it ought to be revenue-free for some time at least till it begins to yield.

QUESTION 22.—CO-OPERATION.—(*a*) (*i*) I think the Government have tried to do all that they can for the growth of co-operative credit, and in some ways it has been a boon to the cultivator, but the cultivators themselves have not understood the advantages of co-operative credit and I think a more intensive propaganda is necessary to bring home to them the advantages of such credit. There has been very little attention paid by Government in the matter of distributive co-operative societies, and in the matter of co-operative societies for production. I think the Government ought to try and push these two kinds of societies from now.

(*ii*) In this country because of the general poverty of the people, they have become too prone to rely on Government help, and it is well nigh impossible for non-official societies to make any progress without Government aid, but I think in the matter of distributive societies, and societies for production non-official agencies like district co-operative associations might be able to give a lead by opening model societies which would prove the advantage of co-operation.

(*b*) (*i*) Credit societies are the ones that are in existence in this Province, and on the whole they have worked well. But they need too much Government supervision and are too much spoon-fed. But where such Government control is relaxed it has been my experience that such societies have soon got into trouble. Though co-operative credit is understood and is recognised as a great boon, the people who are in control of such societies have not understood the responsibility they have to their depositors.

(*ii*) There are no purchase societies I know of in this Province, except those which are in existence merely for purposes of distribution like the Triplicane Urban Co-operative Society. I think if the cultivators themselves could be encouraged to form such societies which will facilitate the marketing of their produce, it will be a great advantage.

(*iii*) There are no such societies in this Province and this again will prove of great advantage specially in cases where the farmer has a large stock and does not know how to get rid of it.

(*iv*) The advantage of co-operative societies for effecting improvements is not prevalent in my district and I think a widespread propaganda to show the advantages of such societies is necessary.

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(*v*) This is a matter which I suggested under answer to the question on fragmentation of holdings. Here again education alone can solve the problem.

(*vi*) The same remarks as to (*v*) applies with equal force.

(*vii*) Joint farming is to my knowledge followed by very few farmers in my district although I know of one or two instances, but co-operative farming will certainly be a great solution of the fragmentation of holdings.

(*viii*) There has been no attempt in this Province for formation of cattle breeding societies, but here again propaganda in favour of such societies will do an immense good.

(*ix*) Co-operation as I have said above inspite of there having been a well-organised department is still in its infancy in this Province with the exception of application of co-operation to the purpose of credit, and a great leeway has to be made before the people would take advantage of it as is implied in this question.

(*c*) It is not a question of small minority being not willing to join in the manner of the subjects suggested, but there is no such idea prevalent among the majority of the agriculturists. I think at present there is no necessity for such legislation.

(*d*) I have very little knowledge of large societies, but the practical experience I have had of a society in my village is not to its advantage as I found the society was careless, and lent money to moneylenders who again lent it to the farmers which really defeated the very object of co-operation. I think that has been the case in societies of which some of my friends have spoken to me.

QUESTION 23.—GENERAL EDUCATION.—(*a*) (*i*) In the case of collegiate education, here I think there can be no special feature, but I would advocate that the Universities in the Province should give special facilities for agricultural education, by making courses attractive and award special scholarships to students who show ability in the matter of research which will go to improve agricultural methods and which will go to increase productive capacity of the land.

(*ii*) Even in the case of middle school I think this kind of education again ought to be imparted in such a way as does not interfere with the boy's apprenticeship in his father's trade.

(*iii*) I am afraid the existing system of education was designed for the manufacture of efficient Government servants, and therefore necessarily has no bearing on the agricultural efficiency of the people. I am of opinion that the time has come when the whole educational method ought to be revolutionised. I am of opinion in a general scheme of education the occupation of the parents is the best for children. Keeping this in view, I am of opinion that elementary school education for the rural population should not make such education interfere with the family apprenticeship of the boys in the trade and occupation of the parents. Part-time schooling wherein the boys will have an elastic and voluntary time-table is best suited for the ryot population.

(*b*) (*i*) As I have said above if a method could be devised for not taking away the boys from their father's trade a great step will have been taken towards the direction of keeping men on the land.

(*ii*) As I have said in my answer before, I am afraid the approach towards a system of compulsory education has been a very tardy one, and no effective criticism of the method can be made at present.

(*iii*) The reason is, the boys are wanted by their parents for work on their own farm, and unless a system of part-time education is introduced you can never attract boys beyond the 3rd class.

QUESTION 24.—ATTRACTING CAPITAL.—(*a*) Unless agriculture is made a more paying proposition you will not attract men of capital and enterprise to it. Besides the lure of commerce and industry is too great for a capitalist to be attracted towards agriculture.

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(*b*) I can only speak as a landlord governed by the Estates Land Act Under the Act generally a landlord is left with a small proportion of land on his estate which he can call his own, and it does not pay him to effect any improvement because usually the land he holds is so small. He cannot increase his holding because the Act forbids his purchase of his tenant's land, because once he lets, that land goes into a lessee's hand and such a person can claim occupancy. Again fragmentation of holding prevent experiments on a large scale. There are not enough credit facilities in existence for a landowner to make improvements on a large scale. Again the landholders as a class have not had a good general education to think of effecting improvements and keep themselves in touch with modern scientific farming.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(*a*) I think the drink evil among the rural population with whom I am in touch has got to such a bad state, that it will be in the interest of the farmer if the Government could devise methods by which it could be checked. The Government policy of maximum of revenue and minimum of consumption has not led in any way to diminish drink. So some method to stop it ought to be devised.

(*b*) I think it will be to the advantage of the rural population if economic surveys of typical villages could be conducted by the Government as was done in Poona under the guidance of Dr. Harold Mann. Mr. Jack's "The Economic Life of a Bengal District," is an instructive book in this respect, and such surveys will tend to show what are the hardships of the rural population which the Government can easily alleviate.

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Oral Evidence.

14861. *The Chairman:* Dr. Subbarayan, you are zamindar of Kumaramangalam?—Yes.

14862. And you are a Member of the Madras Legislative Council?—Yes.

14863. You have provided the Royal Commission with a very complete and carefully prepared note of the evidence which you wish to give. Do you desire to say anything in amplification of this note at this moment, or shall I proceed to ask you one or two questions?—I would prefer that you should ask me questions; and I shall say anything I may wish to say afterwards.

14864. May I take you to page 536 of the text of your note. In answer to our question 1 (*b*) you say "I do not think there has been sufficient progress in the matter of introduction of improved cotton." Do you mean to say sufficient progress in recommending particular varieties or in discovering better varieties by research?—Not that; as a matter of fact the indigenous cotton which is grown in this Province is what is called short staple cotton; the variety I talk about, Cambodia cotton, is a long staple variety and it brings more profit to the farmer.

14865. Is it your view that in their propaganda they could do more?—That is my opinion.

14866. Then I see in sub-section (*c*) you are inclined to think that a good deal more might be done by lift irrigation in this Presidency?—Yes.

14867. Do you mean lift-irrigation by machine power or by bullock power?—Mostly in my district it is done by bullock power; a lot of bullock power is wasted, some economical method should be found by which that power might be conserved and the men may have more water with the help of cattle.

14868. You want an efficient cattle-lift, you are not suggesting a power-lift?—No; the holdings are such that it would be impossible for the men to buy a power-lift.

14869. Would it not be possible to group the holders together?—The tendency is to separate and not to group; that is my experience of my part of the Presidency.

14870. I do not know whether my own experience in a very different country differs very much; the farmers are very independent people. Are they not?—Very very independent people.

14871. I see that on page 537, sub-section (*xii*) you think that a band of educated youths who will devote their time to the public weal would be the best agency for bringing about real social amelioration?—That is my opinion.

14872. Do you see any signs of a movement in that direction?—I am afraid I see no signs at present. There was a little society formed in Madras for bringing this about, but it died out; they could not get enough people who were willing to do the work.

14873. Do you think there is any sympathy with the cultivator or interest in his work among the so-called intelligentsia?—I am afraid as far as my experience goes, at present the intelligentsia are not very much interested in the uplift of the agricultural population.

14874. You say: "It is time a system of compulsory education is introduced." Do you mean a system of compulsion throughout the Province? The present position is that the districts are able to adopt compulsion if they so desire?—Yes; that is what the Elementary Education Act has provided.

14875. Do you want to go further than that?—I do. I feel that the Elementary Education Act has failed in its object, and only a few of the local bodies have taken advantage of the Section giving them power to compel.

14876. On page 537, in answer to question 3, you are talking about Agricultural Demonstrators: I want to ask you whether in your experience the Demonstrators of the Agricultural Department fail to some extent in that they have no commercial or managerial knowledge and their knowledge is purely technical?—My experience is that these Demonstrators mostly come

from a class to which the agriculturists do not belong. As I have said, they do not understand the psychology of the agricultural population, neither have they the sympathy that is needed in order to bring the agriculturists to understand what they are driving at.

14877. Do you think that if they had a knowledge of farm management and of the commercial side of farming, they would be in more sympathetic touch with the cultivators?—I think it would be very much better; they would be able to understand what is really needed by the cultivator.

14878. And they might be able to help him in his marketing?—Yes; I think so.

14879. On page 538, in answer to question 4, you point to the growing spirit of provincialism. You probably agree with me that local patriotism is the foundation of a wider patriotism?—Yes; I entirely agree with you. The present tendency in the Province is to get very jealous of being interfered with by the Imperial Government.

14880. Would you agree with me that India's future is as an Empire and not as a group of independent Provinces?—I am in entire agreement with you.

14881. That does not mean that either of us wishes to interfere with the provincialisation of any particular subject such as agriculture?—No.

14882. I see you place the leakage between the pocket of the Government and the pocket of the borrower in the matter of *taccavi* loans as high as 25 per cent?—I was talking of a personal experience; I will not mention names. A particular village headman of mine wanted money for sinking a well.

14883. How much?—Rs. 500 was sanctioned, and by the time it got into his hands it had become Rs. 400.

14884. By percolation and evaporation?—Yes, quite so.

14885. On page 539, you say, "Usually in the villages in this Province the main cause of borrowing by the cultivator is for the purposes of marriages and feasts." It is difficult to get accurate information on this question?—Here again, I am talking from my personal experience; I am in the habit of lending money at cheap rates of interest to the tenants of my holding.

14886. Would you mind telling us the actual rates of interest? If you do not want to, I will not press you?—Between 6 and 9 per cent., never more than 9 and never less than 6 per cent. I generally ask them what they want the money for, when they come round to ask the money, and the general reply is "My daughter's marriage is coming on, and I have got no money to celebrate that marriage; I want Rs. 500 for that." I generally discourage giving loans for that purpose; I only give loans if they want to buy cattle or seed, or anything necessary for agricultural operations. Of course, I feel that the relation between the landlord and the tenant should be such that you should as far as possible sympathise with him; and, as far as possible I oblige him in the matter of loans for marriage feasts, but warning him that it is a bad thing for him to do this. If he insists and says that he is too poor and cannot afford it, I lend him the money for that purpose. The general tendency among small landholders is that they are inclined to spend more than they can economically afford on this sort of thing.

14887. I want you to give us very accurate information in this matter, if you can. Take the typical cultivator that you are thinking of; what would his net annual income be, approximately?—Rs. 50 to Rs. 60.

14888. His net annual income would be Rs. 60?—Yes.

14889. On that he has got to keep himself and his family?—Yes, and generally, on an average, I should put it at 5 persons to the family.

14890. That is the typical cultivator?—Yes, that means he will have Rs. 5 a month.

14891. What, do you think, is the typical marriage expenditure in that class of life?—He generally spends Rs. 250 to Rs. 300 on a marriage, which is more than 6 times his income.

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14892. You think that is a careful and accurate estimate of the average expense?—Yes, as far as my experience goes in the villages.

14893. Can you cite any instances where cultivators of that standard of living have spent a great deal more than the figure you have mentioned?—As far as I know, I cannot. Of course, among the people of my caste they have a system by which, when a marriage is celebrated, the caste people come round and pay a certain proportion of money to the bride and bridegroom; they call it *Moi* in Tamil, and that amounts to Rs. 200 or Rs. 250; in that way, a man is able to pay back the debt. But it is really different in this sense, that if there is a marriage at the house of his next door neighbour, he has got to pay back the amount and a little more. if he goes to attend the marriage of his neighbour.

14894. Are you quite satisfied that you wish to limit by statute the rate of interest to be charged?—Yes, I am quite satisfied on that account, and in my personal experience (I am talking of tenants who have borrowed money) there have been cases where the interest has been as much as 150 per cent.

14895. That is compound interest?—Yes.

14896. And you are also satisfied that the free right of alienation might well be taken away from the farmers?—Yes.

14897. You do not think that that would limit their credit?—Even if it did, it would be a very good thing in the end; it would go to conserve their energy and property.

14898. On the other hand, you think it would be a good thing if the managers of minors' properties were allowed by the law to borrow on the property?—Yes; I am thinking more of what is called the Settled Land Act in England, by which the live estate holder is allowed to raise money on his estate in order to improve the estate.

14899. On page 542, with regard to the improvement of livestock you say: "I think if cattle-breeding is popularised, and the larger landholders come to realise what a profitable concern that could be, it would act as a stimulus towards getting a better stock of cattle." Are you taking any steps yourself in that direction?—I have got very little land of what we call home farm; I have not got a large enough holding to try any experiment of that kind.

14900. *The Raja of Parlakimedi:* Grazing is limited I suppose?—Yes.

14901. *The Chairman:* Do you know of any large landholder who has pedigree herds of stock?—I have mentioned one name in answer to question 16 (*a*), that of the Pattagar of Palayakottai. He has a large herd of cattle, and his experiments have been successful; he has got the Kangayam cattle, which are supposed in this part of the Province to be the best breed.

14902. Do you know whether the experiment has been remunerative?—It has been very remunerative, because he has a large area of land for fodder, and he has a large number of cattle which people from all parts of the Presidency go to buy.

14903. It is the case, I suppose, that many large landholders in this Presidency have no large home farms or tracts in their own hands?—No, because, as I have said in answer to a further question, the Estates Land Act prohibits them from having a large portion of land, and if they were to buy land from a tenant and let it out, they lose it; it goes back as *ryoti* land, under the Estates Land Act.

14904. That makes the holding, and the cultivating in your own hands, of sufficient lands for the purpose of experiment or cattle-breeding rather a self-sacrificing operation?—Yes, quite true.

14905. You have a certain amount of experience of co-operative societies and particularly of credit societies, have you not?—I am talking about small credit societies in my own village.

14906. You talk to your friends about your experiences?—Yes.

14907. I do not gather from the general trend of your remarks in this connection that you are too confident about the soundness of this credit move-

ment?—What I have found is, generally these credit societies in the end get crowded with moneylenders who also give money to the society, and what happens is that they take back the money themselves and begin lending it at exorbitant rates of interest to the farmers round about.

14908. How many cases are there where that has actually developed?—I know of some cases in my own village.

14909. I find a little difficulty in following your argument on page 543, you say, "Credit societies are the ones that are in existence in this Province, and on the whole they have worked well. But they need too much Government supervision and are too much spoon-fed. But where such Government control is relaxed it has been my experience that such societies have soon got into trouble." If they get into trouble when the spoon-feeding is stopped, why do you recommend the cessation of the support?—Evidently, there has been a misapprehension; I do not recommend the cessation of support. What I mean is that some method ought to be found by which the societies ought to be educated to think of their responsibility more.

14910. Probably it is a case of expecting villagers in charge of societies to learn in six months what they may take 10 years to learn, by removing the expert supervision at too early a stage?—I do not recommend that.

14911. You want expert supervision to be left until they can manage their own affairs?—Yes.

14912. You say on page 544, "co-operative farming will certainly be a great solution of the fragmentation of holdings." Do you think that joint farming is really likely to be a success?—When the holdings are small, as they happen to be in this Province, I think it would be a success if some system could be devised by which they could be held co-operatively and the profits divided between the owners.

14913. I should have thought that, human nature being what it is, it would be very difficult to keep the peace with one ryot in charge. They must have one outside person as manager?—Yes, and I think it could be only done by legislation.

14914. You are going to have legislation directed to what end?—Towards consolidating the holding; I believe there has been an attempt made in this direction in Bombay.

14915. But not under the co-operative system; not under joint systems of farming?—No; to limit the holding. They did not want to go further.

14916. On page 544, in answer to our question 23, section (*b*), sub-section (*iii*), you say: "The reason is, the boys are wanted by their parents for work on their own farm, and unless a system of part-time education is introduced you can never attract boys beyond the 3rd class." That has to account for the leakage in the elementary schools?—Yes; after about 3 standards, you generally find the boys go back because they are then just about 12 years old, and they are wanted then by their parents to work on the farms.

14917. You say, part-time education; would part-season education be the same?—I do not mean part-season education; the boy should go to school sometime in the morning when he is not wanted on the land. He would still be under the apprenticeship of the parent, so that he would not lose touch with the land either.

14918. Is your slack season one during which he can do longer hours?—Yes; about 4 months in the year from July to November.

14919. Has any attempt been made to study school hours and curriculum?—No.

14920. It is a rigid system?—The Education Department have a rigid system which is followed all over the Province in the same way.

14921. If the boy cannot keep the school hours, he just drops away from school altogether?—He just drops away.

14922. On page 545, in answer to question 24 (*b*) you say: " There are not enough credit facilities in existence for a landowner to make improvements on a large scale." Supposing a landowner wants to borrow money, where does he go as a rule?—He has usually to go to the banks, and the banks do not give loans except on securities, and not on landed security but only on what they call floating security like Government Promissory Notes or shares in mills which are marketable easily, and on the signature of two people of whom they approve.

14923. Or on mortgage?—No, you cannot get a loan from a bank by mortgage of land.

14924. That is the case?—That is the case in this Province.

14925. So that the proprietor cannot raise a loan by mortgaging his land with a bank?—If he wants to raise money by a mortgage, he has to go to a moneylender, and then the rate of interest may vary from 18 to 36 per cent.

14926. Am I right in thinking that such a landowner has no source of credit on which he could borrow money from the banks?—Very rarely he has, unless he owns large holdings and Government Promissory Notes.

14927. On page 545, in answer to question No. 25, you say: " I think the drink evil among the rural population with whom I am in touch has got to such a bad state that it will be in the interests of the farmer if the Government could devise methods by which it could be checked." You are thinking there of the small cultivator?—Yes, and the farm labourer.

14928. Are they both drinking?—They are both drinking. Generally toddy shops are crowded. My own experience is that they crowd there after about five o'clock in the evening till about seven.

14929. When do they open the shops?—They are open all day.

14930. *Dr. Hyder:* There are certain hours, are there not?—Yes, but they somehow get round them.

14931. *The Chairman:* By the back door as well as by the front door?—Yes.

14932. You are in an irrigated district and not in a dry area?—No; it is a dry area.

14933. Can you give us any indication of the amount of money spent by the cultivator on drink?—I take the ordinary labourer who is working on agricultural land. Generally, the rate of wages in my part of the country is 4 to 5 annas a day. At the end of the day, he goes out to take toddy and generally spends 2 annas on it. He has really got only half the sum left to keep his wife, children and himself beyond want.

14934. Would you tell me how much a glass of toddy costs?—About an anna a pot; I do not know what they call it. They give it in a little mud pot which will contain about a quarter of a measure; and it costs about an anna.

14935. Is it an intoxicating spirit?—Yes, if taken in sufficient quantity.

14936. What is a sufficiently large quantity?—About three or four of these pots that I mentioned will be enough to intoxicate a man. If you go to the village at about 6 o'clock in the evening, you will see them come out of the toddy shop and you can certainly see whether they are intoxicated or not; I should say that the general state of the people who come out of the toddy shop is one of complete intoxication.

14937. And it costs them about 3 annas to enjoy the earlier stages of intoxication?—Yes. Very often they spend even more than that, some of them at any rate do.

14938. Is that seriously affecting their lives, do you think?—It seriously affects the peace in the district, I know, because it leads to murder and riot. If you take statistics, you will find that Salem heads the list almost, in the matter of crimes.

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14939. But do you think yourself the health of the cultivators and labourers in your district is not so good as it used to be?—I think so; their health is much worse now.

14940. Due to drink?—Yes, because the people are taking to drink.

14941. Do you mean to say it leads to deterioration?—I cannot account for it otherwise. In spite of the policy of the Government "maximum of revenue and minimum of consumption," it has become a maximum of revenue and a maximum of consumption.

14942. Do you know the figures of toddy consumption for your Province? —No; I am only talking from personal experience.

14943. Has the standard of living of cultivators and labourers in your district risen in your opinion?—I think it has risen by about 25 per cent.

14944. Does that increase account for the increase in drink?—Having no other recreation the farmer perhaps thinks this is one recreation he can indulge in.

14945. I want to ask you about soil fertility. Yours is a typical irrigated area, is it?—No. It is a dry area. It has very little facilities for irrigation except well and tank irrigation which depends very much on the seasonal rains.

14946. Even your wells do?—Yes.

14947. You have no deep wells?—We have very deep wells, but we have had no rain for the last four or five years; they have gone down; there is very little water; there is only 3 or 4 feet of water in wells going down 50 to 60 feet.

14948. To what extent has the water table sunk during the last few years? —It has sunk to 25 or 30 feet.

14949. Are these wells dug at the landowners' expense or at the cultivators' expense?—They are mostly dug at the cultivators' expense; I am speak ing of the lands on my estate, because there the tenants have what is called the occupancy right.

14950. How many crops are your tenants getting off their land?—In well-irrigated areas they generally get two crops; if the wells are full they have a paddy crop at first and after that they have a *ragi* crop.

14951. Both irrigated from the well?—Yes, both irrigated from the well; *ragi* requires less water than paddy; that is why they are able to raise a second crop of *ragi*.

14952. In your experience, has the productivity of the soil increased or declined during your life time?—I think it has on the whole increased, because the farmer in my part of the world is quite a shrewd fellow; he knows all about fertilisers, natural fertilisers, I mean. For instance, he pens his sheep on the farm and takes them round day after day. He pens sheep on one field for about six days, the next week he removes them.

14953. Are those sheep fed?—Yes, on fodder *cumbu* and *cholam*, not the crop but the hay of it, what we call in Tamil "*thattu*."

14954. Do you think the technique of agriculture has improved in your experience during your life time?—I think it has to a certain extent.

14955. And that the yield per acre has risen?—Yes.

14956. Do the cultivators find it reasonably easy to get the manure they require at current prices?—As a matter of fact the small cultivators hardly ever buy manure. They get on with cowdung and the sheep penning which I mentioned; the manure that they buy is mostly leaf manure from the forest areas.

14957. Is it your opinion that they could profitably use artificial fertilisers? —I am not sufficiently acquainted with that matter to give an opinion.

14958. As regards the dry cultivation not under well-irrigation, do you think that the Agricultural Department both by research and through its demonstration staff has made any contribution to the various problems of your

cultivators?—To a certain extent I think they have, but not to the extent they could have.

14959. In what direction do you suggest they have failed?—For instance, the Demonstrators go round as I said before, but I do not think they exactly understand the needs of the cultivator.

14960. In this matter of fodder for sheep and oxen is there any attempt to preserve fodder through the season?—Yes, the cultivator in my part of the world does preserve fodder. He stacks it up and keeps it for seasons of scarcity; but as I have said during the last five years the rains have been such a failure that even that has gone; usually he does preserve fodder.

14961. Is he growing any fodder crop at all?—Yes, he grows things like *cumbu* or *cholam* the straw of which is very good for fodder.

14962. Has any attempt been made to introduce preservation of fodder by means of the silage method?—No, I do not think he knows that method.

14963. Do the Agricultural Demonstrators tell him anything about silage?—I do not think there has been any attempt in that direction in my part of the country.

14964. With regard to the cultivation of lands not irrigated by wells, are such lands not irrigated by wells because wells cannot be dug, or is it merely because they have not been dug?—Well, there are cases where you cannot dig wells; they have tried borings but have not succeeded; they have really to depend on the rains very much; they grow dry crops like *cumbu* with seasonal rains.

14965. Such cultivation depends a great deal for its efficiency upon the ploughing that is carried out?—Yes, and the amount of rainfall also.

14966. But with a given amount of rainfall, good cultivation will show a very much larger return than poor cultivation, will it not?—Yes, certainly.

14967. Making the most of the available rainfall?—Yes; as I have said in the matter of ploughing he has got to use his time-honored plough because he has not got the money to buy heavier draught cattle which will be necessary if he uses the improved plough.

14968. These are cultivators on dry land without wells. How many times do they plough as a rule?—They plough only twice; and mostly the ordinary plough is of such a nature that it only turns the top soil and does nothing more.

14969. *The Raja of Parlakimedi :* But that depends entirely upon the crop they grow?—Yes; they grow dry crops, like *cumbu* and *cholam* and ground-nut.

14970. *The Chairman :* Do you think the Agricultural Department has made any contribution towards that particular kind of cultivation?—Yes, they have tried to introduce the improved plough but it is no use to the cultivator because he has not got the wherewithal to buy the necessary cattle; the ordinary draught animal which you find in my district is very small.

14971. Would you agree that an improvement in the size and the vitality of the draught animal would make a very great contribution towards better cultivation?—Yes.

14972. Are there any really good bulls available for service?—There are one or two bulls bought from Kangayam which I keep in my own farm and which are used for service; but they say it is not successful for the simple reason that the Kangayam bulls are of a heavier variety, with the result that the cows which have been served by these bulls generally die after the first or second calf.

14973. Do you think they are right in that view?—That is what they say; I have no personal experience. But the cattle I have on the farm are all Kangayam cattle.

14974. But, assuming they are right, it looks as though you had got the wrong bulls, does it not?—Yes. But the Kangayam bull is itself a real improvement on the kind of cattle that are to be found in my part of the

country. I think the people really have not taken advantage of it; they are too conservative.

14975. How much do you charge for the service of the bull?—I have charged nothing so far.

14976. Do they pay any attention to the welfare and proper feeding of their cows?—Yes. Most of the farmers do pay a great deal of attention to their cows.

14977. So that there is not the too common half starving of the cows which one meets with?—I do not think so except perhaps during the past five years when the fodder failed; as I have said in my written answer, they have been trying to get rid of their cattle for that reason. Some of them will even give them away for nothing now.

14978. What do they do afterwards?—Would they buy working bulls just before the ploughing season?—Yes, they are more necessary for them then.

14979. And sell them again at the end of the working season; is that the idea?—No; some of them ply carts for hire after the ploughing season is over, and these bulls are kept for that purpose. It is really for marketing their own produce.

14980. Have you had any authoritative expression of opinion from the Meteorological Department as to whether the rainfall conditions over the last fifty years show any definite tendency towards change in your district?—No, I have not had anything.

14981. It is a very serious matter for your district, is it not?—Yes, it has been a very serious matter.

14982. From your experience and from what you have heard from others older than yourself, do you think that the rainfall is definitely diminishing? —During the last five years it has certainly diminished a great deal; in 1920 we had a very good rainfall after about four years of scarcity.

14983. *Sir James MacKenna:* When was the Estates Land Act passed?—In 1908.

14984. What was its object, do you know?—The object was to protect the tenants, because the Government felt at that time that they were being evicted.

14985. I thought that was the probable object, but, as you point out, it is a serious restriction on a large landowner like yourself who might have a home farm that you might develop on scientific lines?—Yes.

14986. How much is left to you actually of your home farm?—My whole estate is 39,385 acres; but my home farm only amounts to 156 acres.

14987. Then it cannot be more than a hobby. That of course happened before you succeeded to the estate?—Yes; the estate was under the Court of Wards at the time.

14988. Was much of it alienated during the period when it was under the Court of Wards?—No; the 156 acres were practically what we had before.

14989. Would you mind telling us what the rent is on your estate?—We have got three kinds of land, the dry, the garden and the wet. The dry rate on my estate is Rs. 1-10-0 per acre on an average; the garden rate is Rs. 4-12-0 and the wet rate, Rs. 6-12-0.

14990. Is that paid in money or in kind?—In money.

14991. Do you pay the revenue?—Yes.

14992. Do you give the tenants anything else by way of cattle or seed or anything like that?—No.

14993. That is a flat rent?—Yes.

14994. Can you tell us what the average outturn of these lands is, the dry cultivation and the wet?—The man who pays Re. 1-10-0 per acre gets a net income of about Rs. 20 per acre.

14995. I was not thinking so much about the value of his outturn; I was rather anxious to know the outturn of crops that he grows per acre? What does he cultivate on the dry land?—Mostly *cumbu* and ground-nut.

14996. *The Raja of Parlakimedi :* Is not tobacco grown in your parts?—No.

14997. *Sir James MacKenna :* What is the average outturn of rice on your wet land?—About Rs. 50 an acre.

14998. How many lbs. of rice?—I cannot give accurate information on that.

14999. Are the cultivators indebted to you to any great extent? You were pleased of course to tell us that they borrow for marriages and other expenses?—Yes; in the estate now there are sums owing by my tenants to the extent of about Rs. 15,000.

15000. That is on 38,000 acres?—Yes. I am afraid there is also a lot of outside debt which would have been borrowed at exorbitant rates of interest from moneylenders.

15001. Would you say that they are heavily indebted as a class, the whole population on your estate?—Yes, I think they are very heavily indebted at present because I find there are lots of money decrees against them; they are selling their land and these moneylenders really become holders under them instead of the tenants whose lands they have bought up.

15002. You are rather in an awkward position. You cannot buy the land yourself and you have to take in an outsider whom you probably do not want?—Yes.

15003. Is there any emigration from your estate to Burma?—There has been emigration, generally to Ceylon and the Malay States.

15004. To Burma?—No.

15005. Do these young men come back and settle on the estate again?—Some of them come back, but generally after a very long time.

15006. They bring a good deal of money back, I suppose?—In my experience they do not bring as much as they expect to bring when they go.

15007. Probably the drink question again? Can you do anything in the villages to improve the social conditions? Have you done anything in that way?—I am afraid at present nothing can be done until their standard of living and their education are raised. They really do not understand these modern methods of sanitation; they think that you are interfering with their time immemorial customs.

15008. You think that is a very serious obstacle?—Yes.

15009. What is the nearest Government farm to your estate?—The nearest one is the Coimbatore farm.

15010. Do you ever take a party of your tenants there?—No; the farm is 87 miles away.

15011. *Professor Gangulee :* Do you give loans to your tenants?—Yes.

15012. Have you attempted to form a co-operative society?—There was an attempt made by me to begin with when first I took over charge of my estate, but I found that it did not do much good, because it meant putting in my own money.

15013. Did you try to form a society under your own guidance?—Yes.

15014. And you failed?—Yes, I failed for the simple reason that most of the money for the credit had to be provided by me; so I preferred to do it by myself instead of having a co-operative society.

15015. Do your tenants depend solely on agriculture or have they any subsidiary industries?—No; they are solely dependent on agriculture.

15016. Is there no weaving?—There are weavers but they are not tenants; they are part-time cultivators; when the weaving season is over they cultivate; they are labourers on the soil.

15017. None of your tenants weave?—No.

15018. None of your tenants carry on the silk weaving industry?—No, nothing of the sort.

15019. They depend solely on agriculture?—Yes.

15020. Have you given any thought to the possibility of introducing any such subsidiary industries?—As a matter of fact I have helped Mr. Rajagopalachariar to a certain extent but the money has mostly come from the Congress funds for starting a spinning industry three miles away from my estate.

15021. You have a number of weavers called *patnools*?—That is not in my part; it is in Salem town.

15022. And a certain amount of silk weaving is going on in Salem town?—That is by the *patnools*.

15023. They get silk from outside, from Mysore territory?—Yes.

15024. Your chief food crop is paddy?—No; in my part of the world there is very little paddy. The main crops are *cumbu*, *cholam* and *ragi*.

15025. Are there any money crops except ground-nut?—Cotton.

15026. What is the proportion of the money crop to the total crop? Do you find a tendency to increase the area under money crops?—Yes, there has been a tendency especially during the last 15 years; they have been turning the *cumbu* land into ground-nut, because it pays much better to grow ground-nut than *cumbu*.

15027. Do you consider that to be a very healthy tendency?—I rather wish they would grow *cumbu* because it gives fodder for the cattle and food for the people.

15028. But ground-nut gives more money?—Yes and they prefer to have the money, naturally.

15029. Have you an agricultural officer to look after your tenants, to give them advice in agricultural matters?—No.

15030. Have you any waste land in your estate?—No; as a matter of fact about 84 per cent. of my land is cultivable and held under *ryoti* tenure; they have got occupancy rights.

15031. With regard to demonstration, do you know if Agricultural Demonstrators visit your tenants?—No; I do not think they do; there has been no visit by any Agricultural Demonstrator to the villages that I hold.

15032. No Demonstrator has ever been to your locality?—No; they come very near my estate, to the Government village next to mine.

15033. What do you mean by a Government village?—A village held under ryotwari tenure, in contradistinction to a village under zamindari tenure as held by me.

15034. Did you make any attempt to invite any of these Demonstrators to come?—Yes, they have been asked to come but the tenants themselves think they are going to get no good out of them.

15035. I follow that, but did you yourself send an invitation to the Demonstrators asking them to visit your tenants?—No.

15036. Are there any facilities for marketing? How do your tenants sell their commodities?—As far as my part of the world is concerned, we have a weekly *shandy* and round about there are 3 or 4 *shandies*, which means they have *shandies* for four days in the week and they sell their stuff there.

15037. Have you studied the marketing conditions, the process by which they sell their commodities?—No.

15038. Have you any omnibus service from Salem to you estate?—Yes, there is a service from Salem to Tiruchengode.

15039. That is very close to your estate?—Tiruchengode is in my estate.

15040. Since when has this omnibus service been introduced?—During the last 7 years; but it has been very irregular; three or four companies have tried it; the one we have now has been running for the last 3 or 4 years.

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15041. Has this improved omnibus service made any significant change in he village?—I do not think it has, because the omnibus service carries only passengers; it has done nothing towards carrying any goods.

15042. You do not think the better transport facilities have had any effect on the village as a whole?—No.

15043. With regard to toddy drinking, do you know of an experiment being made by the Excise Department in your district, in Atur taluk?—No; that is far away from me.

15044. Do you know of any proposal for the closing of toddy shops for 3 years from the 1st of April 1924 in certain taluks?—No, I have no experience of it; I know nothing about it.

15045. *Mr. Calvert:* Apart from yourself as a benevolent landlord, is there any custom in this Presidency whereby landlords lend money to tenants with the ultimate hope of keeping them in their grip?—I have no experience of landlords of that type; I cannot give you any answer to that question.

15046. On this question of indebtedness, you say the cultivator finds it hard to pay, because he has borrowed more than he can afford. Is it the principal sum or the interest which forms the burden?—I think the interest is the burden.

15047. Do the moneylenders here keep accurate accounts?—I do not think they do. As a matter of fact what happens in my personal experience is they simply go out and get hold of the crop as soon as the crop is ready; they say that is interest; the interest sometimes works out at 150 per cent. even.

15048. Is complaint made here against dishonest account keeping of the moneylenders?—There has been a great complaint among my tenants.

15049. Our experience is that dishonest account keeping is a bigger burden than the interest. Is that your experience?—I think I can corroborate that statement because my complaint is that they do not even account. For instance they take away as much as 35 or 40 per cent. as interest and when the time comes the poor cultivator has not enough knowledge to know how much has been taken from him. Very often he finds there has been no account of the sums taken from him.

15050. Would you like to have something more stringent than the Usurious Loans Act?—Yes.

15051. Is the Usurious Loans Act made use of in your neighbourhood?—It has been made use of by tenants when they go to court; it depends very much on the Munsif who happens to be sitting; some of the District Munsifs have been sympathetic and applied it very stringently, while on the other hand some have not cared to apply the Act at all.

15052. Do you think that that Act has served to raise the rate of interest against the cultivator?—I think in a way it has. What the moneylender now does is that before he lends the money he deducts the interest. That is not found in the accounts at all or in any documents that can be produced before the court. Supposing he lends Rs. 100 and the interest is 24 per cent., he takes Rs. 24 and gives the cultivator Rs. 76.

15053. There is a proposal to amend that Act to enable the mortgagor to have his account examined by the court with a view to redemption. Would you favour that?—I do not understand the question.

15054. Under the proposed amendment the mortgagor can go to the court for a statement of accounts; if the Munsif finds that the mortgagor has paid the principal and a fair amount of interest, the Munsif can order the redemption of the land?—Yes; I would favour an amendment of that type.

15055. There is no special Act in this Presidency to facilitate redemption of mortgages?—No, there is no special Act.

15056. Have you any idea of the proportion between secured and unsecured debt?—Most of the debts that I have lent myself are secured debts. Of course as I have explained to the Chairman the security is not good, because

the security is on land held under ryot tenure by my own tenants; they cannot be ejected; the debt goes to the next man who buys the land from him.

15057. Normally the ryot keeps a kind of shop account with the moneylender?—Yes.

15058. When that shop account gets high the moneylender demands mortgage security?—Yes, that has been my experience.

15059. The mortgage debt of the Presidency is estimated at 90 crores. Could you say what is the proportion of that to the unsecured debt?—No.

15060. Is it your experience that these mortgages are incurred for productive or for unproductive purposes?—As I said, sometimes it may be for unproductive purposes; money may be borrowed for purposes of marriage.

15061. You have not investigated to find out how much is productive and how much is unproductive?—No. I cannot give a definite figure.

15062. Are there any social or religious restrictions on the mortgaging of ancestral lands in this Presidency?—There is no such restriction on the ordinary ryotwari landholder.

15063. If he mortgages his ancestral lands his relations cannot interfere?—No; they cannot.

15064. You would advocate the method of arbitration for disputes in villages. You know of course that under the civil law of the land every person has the right to go to a civil court, and he is unable to contract out of that generally?—Yes, that is so.

15065. To enable him to contract out for specific objects, would you favour an amendment permitting village arbitration societies to be formed to which they would agree to refer all their disputes for arbitration?—I would favour that, because, as I said, litigation very often leads to loss of holdings in the end.

15066. In theory of course that is an infringement of the basic right of the citizen, but in practice it is beneficial?—Yes; I think in practice it will be very beneficial.

15067. I gathered from some answers you gave that you would be in favour of a special staff purely to educate the people in co-operation and in village economics?—Yes.

15068. Something on the Punjab lines?—Yes; I am very interested in Mr. Darling's book "The Punjab Peasant in Prosperity and in Debt." Some system devised on those lines would be very useful in this Presidency.

15069. Has there been any similar investigation into debt in this Province?—I do not think there has been so far as my experience goes.

15070. Your co-operative societies do actually teach thrift to some extent?—They are merely co-operative credit societies.

15071. There is a thrift side to them?—Yes, in the sense that they might keep a man from going to the moneylender and paying exorbitant rates of interest.

15072. But the ultimate ideal held before them is self-help and self-management, is it not?—Yes.

15073. And that ideal could be promoted by a special staff for educating them in co-operative principles and rural economics?—Yes.

15074. In answer to Professor Gangulee you stated that you had tried to start co-operative credit societies on your estate; I do not quite understand your difficulty there?—The difficulty is if you try to start a co-operative credit society you have to get so many people to put their money into the society. What happened was nobody ever came forward to pay in the money.

15075. But you already give a certain amount of assistance to your tenants?—Yes. What I wanted was that they should themselves gather together some credit of their own and lend it out among themselves in small societies composed of three or four villages; but it did not succeed.

15076. But if you start a society originally, with money provided by yourself, would they not in a number of years, say 15 years, collect shares?—They did not do it. I tried it for 10 years but nothing happened; my money remained; they were taking it out and bringing it back again; they did not raise any money by themselves.

15077. Did you get powers from the Registrar of Co-operative Societies to control your society?—No; I did not; it was only a private society.

15078. *Mr. Kamat:* When your tenants borrowed for marriage purposes, marriage was the immediate cause of borrowing, was it?—Yes.

15079. Have you tried to trace the remote cause? You said their annual income is only Rs. 50 or Rs. 60. Would that leave them a saving for any marriage expenses or for sickness or old age?—No; as I said the income is hardly enough for a square meal a day.

15080. So that it comes to this; the real cause of their borrowing is the unremunerative character of their agriculture?—Yes, you may put it that way.

15081. It has been stated that big zamindars do not improve their estates; you have given some account of the Estates Land Act; do you think this Act comes in the way of improvement of agriculture?—I should say in a way it does, because it takes away the land from the zamindar and gives the right of occupancy to the tenant entirely; so that it is not in the interest of the zamindar to improve the land; as long as the zamindar gets his rent he is satisfied and there is no incentive for him to improve the land.

15082. It is not in the interest of agriculture at all?—No, because the Estates Land Act is so strict that the zamindar has hardly any power to raise the rent above what it is at present.

15083. Have you tried to form a business association of big zamindars to discuss your disabilities?—Yes. There is the Madras Landholders' Association here, but from the knowledge I have of it, I am afraid the landholders have not organised sufficiently to fight for their own rights.

15084. Have they ever discussed possible lines of amending the Act? —If somebody takes up the question, for the time being they get excited and run about, but once the legislation is passed they seem to go under. That is my personal experience.

15085. With regard to Fragmentation of Holdings, you said you were in favour of legislative measures. I should like to know something more about this from you. An attempt was made at one time in the Bombay Presidency to have something like a permissive measure, and another attempt will perhaps shortly be made in a different quarter. Are you in favour of permissive legislation? That is to say, if there are four or five brothers in a family holding a certain estate, and a majority of them come forward to Government with a request to register that estate as impartible, then only should Government interfere, not otherwise. Are you in favour of such permissive legislation, or is it your idea that it should be compulsory?—I should rather be in favour of compulsory legislation.

15086. You are out and out for compulsion?—Yes.

15087. I am very glad to hear it. Then about cattle, you say on page 542, "I think people must be taught to get rid of cattle that have had their use. The stock would certainly become better if useless cattle are destroyed." In what way should the people be educated?—I think the great hindrance to the destruction of cattle now is the great reverence that the Hindu pays to the cow.

15088. We know that; but what would be your method of educating the people; how would you go about it?—I think they ought to be gradually taught that it is no use keeping all these cattle, that it only uses up the fodder which they might give to better cattle, so that useless cattle had better be destroyed than kept.

15089. Who should do it; non-official persons or the Agricultural Department?—I think it ought to be done by both. If the Agricultural Depart-

ment does it the people might think that Government are carrying on a crusade against this great religious sentiment. Non-official agencies will be useful.

15090. If the Agricultural Department did it, do you not think that the Department would become unpopular?—Yes, it would, that is why I say there should be co-opted non-officials to help them in the matter.

15091. *The Chairman:* Mr. Kamat asked you a further question about expenditure at the time of marriage. My own sympathy is entirely with the man who spends more than he has got?—Most of us do, I am afraid.

15092. But it is necessary to get at the facts. I want you to describe from your experience how this Rs. 250, I think that was the figure, is spent; it is important to know whether it is in fact spent on the bride's trousseau; that really is the issue?—It is really spent on feasting the people who come round to the marriage. I am talking about the Non-Brahmin classes, not of the Brahmins among whom there is a system of buying a husband. They have to pay a dowry before they can get a bridegroom.

15093. What about the trousseau; what amount is spent on it?—They go in for a number of clothes, but a large amount is not spent on clothes; they cannot afford it.

15094. Still to that extent the money is not entirely wasted?—It is wasted to this extent that the trousseau is entirely an economic waste. The *sari* which is bought at great expense is worn on very few occasions.

15095. *Professor Gangulee:* What about ornaments and utensils?—They are also of the same nature.

15096. *The Chairman:* Those are assets?—Yes.

15097. Have you any idea what proportion of the money is spent on feasting?—I should say more than half the amount goes to feasting.

15098. Is it customary to provide alcoholic refreshment on those occasions?—No; it is not. As a matter of fact it is forbidden.

15099. By whom?—By social custom; at a marriage you will never see alcholic drink given round.

15100. *Rao Bahadur Muniswami Nayudu:* You told the Commission that under the Estates Land Act you are not given freedom to cultivate the land and have no inducement to improve the land, because once you give it to a tenant, the tenant gets occupancy right?—Yes.

15101. There is nothing in the Act to prevent you from cultivating your land by means of farm labourers?—No.

15102. It is only when you try to reduce yourself to a rent collector that occupancy right is given to the tenant?—I should like you to make your point clear.

15103. When you give land to a person asking him to cultivate it, and remunerate him for his labour and you take the produce, that person does not get the right of occupancy but when you give it to him and say "You cultivate it, but pay me a certain amount" then alone he gets occupancy right?—Yes.

15104. Are you cultivating your lands through farm labourers, or do you cultivate them through tenants?—Except my home farm, which amounts to 156 acres, all the rest is *ryoti* land.

15105. None of those labourers whom you employ on your home farm gets occupancy rights?—They can have no right on that land under the Act.

15106. With regard to improvements, up to ten years they do not get any occupancy right. But after twelve years they do. Therefore, if any landholder chooses to have his land improved and cultivated by his farm labourers and servants, there is no danger?—It is difficult to keep up the extent of the lands under you. You will take one portion in one year and another in another year. Once you let the land go, occupancy rights accrue.

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15107. With regard to actual cultivation by the cultivators, occupancy right under this Act corresponds to the right of the *pattadar* in a Government area?—Yes.

15108. He invests all the money required for improvements, he takes the full produce, but he is liable to pay the rent?—Yes.

15109. He takes all the risks, whether the land yields or does not yield a crop?—Yes.

15110. He does not get any remission even in respect of the lands where the crops have failed?—It depends on the landholder.

15111. He may give it or he may not give it at his good grace and mercy? —Yes.

15112. You say that, in spite of the Elementary Education Act, few local bodies have taken advantage of introducing compulsion?—Yes.

15113. Under the Elementary Education Act the right is given to the local bodies to levy a certain cess?—Yes, the education cess.

15114. Have you knowledge of any local body in your district which has done so?—As a matter of fact, one Taluk Board did levy an education cess; I am paying it myself; but there has been no improvement in the number of schools in that area, or any increased facilities for education; I would go even to this extent that there has not been even an increase of the pay of teachers in spite of their collecting the cess.

15115. Have you considered the question of what is the income that local bodies were able to get, and whether that income will enable them, apart from providing better facilities for the teachers by giving higher pay and other things, to introduce compulsion? Have you considered the aspect of the question whether they had sufficient funds from the cess to introduce compulsory elementary education?—If they have not, then they ought not to have levied that cess, that is my complaint. If they thought that they did not have sufficient funds to do it they had no right to collect the cess from me and apply it for other purposes.

15116. Are you satisfied that they applied it for other purposes?—Yes, I am quite satisfied of that.

15117. Did you make any complaint about it to the President or to the Government?—I did not.

15118. Have you investigated their budget at all?—I have, to a certain extent.

15119. And you are satisfied that it has been applied for other purposes?—Yes, even for the travelling allowance of members of the Taluk Board.

15120. That is the sort of misuse that you complain of?—Yes.

15121. May I tell you that, so far as I know, no travelling allowance is paid to members out of the education fund?—That may be your own experience of your own District Board; I am talking of my experience of my own Taluk Board.

15122. I hope you will correct your ideas when you call for information. I am trying to ascertain from you whether in spite of the best will on the part of the local bodies to levy the full statutory cess, they are not in a position to find the funds for introducing compulsory education?—I have said so; that Government ought to come to their help and apply more of the money that they collect from the rural population to educating the rural classes.

15123. Do you think the people are ready for further taxation to provide the funds for introducing compulsory education?—I think that Government ought to find the funds, because I say that the rural population is already taxed high enough. There need not be two Universities as Government have done at present; they might have a single University and apply the money for the other University to primary education.

15124. Any measure for further taxation would be very unpopular?—Yes, I think it would.

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15125. Are you a believer in legislating to correct the habits of people?—Yes, I think so.

15126. Do you believe that any legislation for the purpose of preventing cowdung being used otherwise than for manure would receive popular support?—It may be unpopular, but if it is really economically sound, I think it ought to be tried.

15127. *Sir Henry Lawrence:* Does your district come under the project proposed for irrigation from the Cauvery river?—Originally it was put under the Mettur project; for the present, as far as I know, I believe it has been taken out of it, because Government have found that the field levels are all against it, though I have been assured by other irrigation experts that the levels are all favourable.

15128. Which district are you referring to?—Salem.

15129. You come under the Cauvery-Mettur project?—Yes.

15130. Is that now a dry crop district?—There is one particular taluk where there is irrigation from the Cauvery, carried on under old methods of irrigation which Mr. Mullings talked about when he was before you; it has been in existence for more than 100 years; even before the British rule came they had been using the water.

15131. Was there a dam across the Cauvery irrigation channel?—They have got what they call the "Korambu" system, by which they dam the river a little and take away the water in small channels to a large reservoir.

15132. There were no large reservoirs in those days?—No.

15133. What irrigation rates would the ryots consider reasonable?—As a matter of fact, on this Mettur project, I was asked to find out what rate of water tax the ryots would be prepared to pay; I did investigate this matter, and they said they were prepared to pay as high a rate as even Rs. 25 per acre, provided they got the water.

15134. What, do you say, is the rate on which the project has been founded?—The figure was worked out by the Engineer in charge of the Mettur project; he said it would not pay to give a canal to the Salem side of this project, unless they were prepared to pay Rs. 28-3 per acre.

15135. So you are not going to get this irrigation, is that the idea?—It is not yet decided; there is a difference of opinion; however, a committee is sitting on the question; and they have come to no conclusions on this point; but the rate that is settled for the Mettur project is Rs. 15 per acre in the Tanjore district; most of the water is going to be given to that district.

15136. And yet, it is as high as the ryots can pay in that area?—Yes. They do not want to pay more than that. As a matter of fact, one of the suggestions I made was that the whole thing ought to be pooled, that the water rate ought to be an average one spread over the districts of Salem, Coimbatore and Tanjore, which this project will serve; but the Tanjore representative on the committee was not agreeable to it at all; he said that if the Salem people did want it, they ought to pay what it would cost Government to give them the water, and Tanjore ought to be left to pay Rs. 15, which is the original rate that was decided upon for them.

15137. How is it that the people in Salem would be willing to pay Rs. 25, and not those in Tanjore?—I have not got the figures, but in Tanjore they have got more than 60 per cent. of the land on the Cauvery delta already irrigated; in Salem we have only about 6 per cent. irrigated land; naturally, the ryots in Salem want water if they can get it; they feel that if they could get the water it would be a paying proposition, and they could pay as much as Rs. 25 per acre.

15138. You mentioned this landlord, the Pattagar of Palayakottai who was improving his livestock. What breed does he work with?—They are called Kangayam cattle, but he has tried experiments with Ayrshire bulls, English cattle.

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15139. Have those experiments been successful?—Some of them have been successful, but some of them have not, because the animals that have been brought out here have not been able to stand the climate.

15140. How many bulls has he experimented with?—He originally brought two; one of them died after 2 or 3 months.

15141. For how long has the other one been working?—For over 2 years; but he has really improved the indigenous stock by crossing with Sindhi cattle; he has brought some Sindhi cattle, because he finds they are good milkers usually; he has cross-bred them with cattle of his own breed, and that has been more successful than importing of foreign cattle.

15142. Is milk an important subject there?—As I have said, he has tried dairying, but without much success.

15143. Do the ryots want to improve their milk supply?—Yes, I think they do; round about him they understand it would be a very good thing, because he stands as an example to them.

15144. When he has brought in the Sindhi bulls, he gets cross-bred stock; does he breed with the cross-bred bulls?—Yes.

15145. Do they give any good results?—I believe the quantity of milk given by the cross-bred cattle has been on the increase, more than what the indigenous cattle in the locality of Coimbatore would give.

15146. For how many generations has he tried this experiment?—I think they have been carrying it on for 3 generations now.

15147. Does he continue to import fresh Sindhi bulls or does he prefer to go on with the cross-breeds?—He got some about 2 years ago; he has done nothing for the last year or two, because there has been a scarcity of fodder, and he has found it very hard to keep the cattle. He has gone as far as Hosur to get fodder for his cattle and even further; he has to take all his fodder by train, which is very expensive.

15148. But the experiment is still going on?—Yes.

15149. He is the only man that you know of who is trying it on a large scale?—Yes, there is nobody else who is doing it.

15150. For the average Salem ryot, would you consider it a feasible proposition to breed his own cattle?—I do not think so, because he has not got the capital; for the ryot with a small holding it will not be profitable; he will have to buy his cattle all the time, unless there can be some co-operative organisation for a joint cattle farm.

15151. There are parts in India, are there not, where the ryots maintain two or three heads of cattle and breed?—They do it in my part, but not successfully; generally the breed deteriorates; that is my experience.

15152. Do they try to give their cows to good bulls?—They do, if they know they can get them near by.

15153. That is the only case you know of where Ayrshire imported stock has been used?—It has been used on the Government farm here; they had at Government House two such bulls.

15154. There is no other zamindar who is doing it?—There is no other case that I know of.

15155. Is there any emigration from your district?—Yes, I have said there has been emigration to Malaya and to Ceylon.

15156. Do these men come back?—Yes, some of them do come back.

15157. Are they low caste or depressed class men?—No, even the caste people go to Ceylon and Malay States.

15158. Do they come back with an improved or with a worse standard of life?—I think they come back with an improved standard of life; but, as I said to the Chairman, a lot of them are responsible for spreading the drink evil.

15159. Do they learn to drink abroad?—Yes.

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15160. Is it toddy they drink abroad?—No, they drink arrack, which is much worse than toddy.

15161. So that the simple ryot who is accustomed to drink toddy is taught to drink arrack?—Yes.

15162. *Sir Ganga Ram :* What is arrack?—It is country spirit.

15163. Is it made of jaggery?—No; it is made of rice.

15164. *Sir Henry Lawrence :* Is there much illicit distillation?—I think there is quite a lot of illicit distillation going on under the eyes of the Excise Department itself.

15165. Is that connived at?—Yes, I think the subordinate staff of the Excise Department (it is a hard thing to say, but from personal experience I say it) do connive at it.

15166. There is a certain amount of corruption among these lower paid subordinates, is there?—Yes; I will give a particular instance; there is a shop in my area; there were formerly no other shops for about 5 miles round, but now they are having shops in all those places. What they do is to start a small shop and toddy or arrack is taken round to that shop and sold. For that I know as much as Rs. 200 to Rs. 300 is paid to the subordinate staff of the Excise Department, so that they wink at it.

15167. Are these men insufficiently paid; is that the reason?—I think some of the subordinates are quite sufficiently paid, but the lure of money is great, and they think they can easily make it; they always make it.

15168. Is the pay of Government subordinates in these lower grades equal to the standard of wages of private labour?—I think it is more.

15169. Government pay their staff well?—That is my opinion.

15170. Would you suggest that they pay them too generously?—I do not say they pay too generously; they are just generous enough.

15171. In higher ranks Government pay less on the standard of private employment, do they not?—I suppose in the lower ranks they have more sympathy perhaps than in the higher ranks, though I do not agree with your proposition that they pay less in the higher ranks.

15172. The lower ranks have more sympathy with whom or from whom?—The Government have sympathy with the lower ranks and they pay them an adequate wage.

15173. Have not wages risen recently? There was a committee of investigation, I think?—Yes, they have been raised to a certain extent.

15174. 20 per cent. or 50 per cent. or what?—I cannot give the exact percentage.

15175. Since the prices went up?—Yes, since the prices went up.

15176. But have you any idea as to whether it was 200 per cent. or 20 per cent.?—No, I have no idea.

15177. Is the salt question an important matter in your district? Is there much difficulty in getting salt?—No, there is not much difficulty.

15178. Is the price of salt higher now than it was before?—The price of salt, I think, is a little bit higher now than it was.

15179. Which years are you comparing?—I am comparing the pre-war price with what it is to-day.

15180. The price of salt to-day is higher than it was before the War?—Yes.

15181. That is to say, since the tax was reduced by 50 per cent. The price is still higher than it was when the tax was higher?—Yes. I cannot give accurate figures, and I cannot say that I am certain about it.

15182. Do you find that women and children also drink, as well as the men?—No. I think it is only the men who drink; it has not gone down to women and children yet.

Dr. P. Subbarayan.

15183. Are women and children allowed to buy liquor?—Yes, women are allowed to buy liquor, but you do not see women and children round the toddy shops in my district.

15184. You think that the expenditure of Government is too largely directed to the benefit of the urban population rather than to the benefit of the rural population?—Yes.

15185. Have you compared the expenditure on these two heads?—No, I have made no comparison; I am only talking from general knowledge.

15186. What is the expenditure you have in view that is directed more to the urban population than to the rural population?—For instance, take University education; they pay a great deal of attention to secondary and University education which benefits really the urban population.

15187. What is the proportion of the revenue that is spent on secondary and University education compared to that spent on primary?—I cannot give any figures because I have not worked out figures.

15188. Will it be about four times as much on primary education as on University and higher education?—Of course if you take the proportion, perhaps more is spent on primary education, but I think the proportion is not enough.

15189. You would cut down higher education by 2 or 3 per cent. of the total?—I would cut it down by 5 per cent.

15190. Even that will not give you a very large sum?—It would be something any way.

15191. Then you suggest that borrowing for purposes of marriage, etc., should be made illegal. By "etc.," do you mean for other uneconomic purposes?—Yes.

15192. Do you think it will be possible to enforce a law like that?—I do not know whether it would be possible, but it would be a good thing if it could be enforced.

15193. Do you know of any country where borrowing for uneconomic purposes is made illegal?—No, I do not know of any such country.

15194. *Sir Ganga Ram:* I want to understand clearly what you mean when you talk of irrigation projects paying 15 per cent. Is that for water or is it a consolidated amount for water as well as land assessment?—As a matter of fact, I was talking not of 15 per cent., but of Rs. 15 per acre.

15195. Consolidated rent or what?—Water rate under the Mettur project.

15196. And supposing the land rate is also levied. In other Provinces you know the net land rate will go up immensely. Supposing these two are decentralised, I mean divided off?—I do not quite understand the purport of your question.

15197. In other Provinces, land revenue is distinct from water rate; but although in the land revenue they charge water rate when settling the land revenue, they consider whether the land is wet or dry or canal irrigated or what?—That is done in this Province also. They do take those things into consideration.

15198. But here they fix a consolidated rate for land revenue as well as for water when considering the Tunghbhadra project or any other project?—I have no experience of irrigation projects.

15199. You said Rs. 15 was as much as you would be able to pay?—I was talking of the Mettur project.

15200. Rs. 15?—Under the Mettur project the Government have said that they could economically give water to the lands in the Tanjore district at Rs. 15 per acre.

15201. Including land revenue or what?—It is water rate alone. The land revenue is of course what they are collecting already.

15202. The land revenue will go up as well?—Under the Settlement Manual, lands, as soon as they become wet, will have a different rate.

Dr. P. Subbarayan.

15203. So they are prepared to pay Rs. 15 for water, *plus* land revenue? Is that right?—Yes, that is right.

15204. And the Bellary people are willing to pay Rs. 25?—Bellary does not come under the Mettur project. Salem and Coimbatore only come under the Mettur project. Salem people are prepared to pay as much as Rs. 25 per acre *plus* land revenue that is already being paid.

15205. Is that in writing, or did every one verbally express it?—They verbally expressed it. Government said they would charge Rs. 28-3 per acre if water was given to the Salem district.

15206. You said you possess something like 39,000 acres of land in one district?—Yes, in Salem district.

15207. In one block?—Yes, you may say it is one block because the villages are near each other, all the 83 villages.

15208. What is your income, may I ask, from these 39,000 acres?—I get Rs. 80,211 out of these 39,000 acres, including wet lands, garden and dry.

15209. *Sir Thomas Middleton :* Would you mind giving us the area of wet, dry and garden lands?—Dry lands are 34,962 acres, garden 3,138 and wet 1,285.

15210. Nearly all the lands are dry lands. Is it a light soil district?—I am not acquainted with soils.

15211. It grows *cumbu* and ground-nut?—Yes.

15212. They are willing to pay Rs. 25 for water?—I was not talking of my estate at all. Very little of the Mettur project comes into my estate. I was talking of the Salem district.

15213. You told us that you introduced for the use of your tenants certain bulls of good quality, but that they were not appreciated?—The tenants did not come for their service very much.

15214. You told us that the progeny died?—Yes; that was their complaint.

15215. Do you know at what age they died?—I cannot give accurate information. After six or eight months they died.

15216. You told us also that the tenants depend entirely on dry fodder for the feeding of their cattle?—Yes, that is *cumbu* hay.

15217. Although you have 3,000 acres of wet cultivation, you do not grow any green fodder?—They grow one crop of paddy and another one of *ragi.*

15218. And the other 1,200 acres?—That is paddy land.

15219. So that no attempt is made to grow green fodder for the cattle?—No attempt is made.

15220. You advocate compulsory education. For how many years would you require attendance at the school?—Four years.

15221. Do you think that if compulsory education were enforced by law, you could also enforce attendance?—Yes, I think we could.

15222. You have considered that question?—Yes.

15223. Have you studied the experiments which have been made in other parts of India on the subject?—No, I have not studied them.

15224. You suggest that the students who pass their agricultural college course, etc., might be given special facilities as are given in the Punjab. What is your idea? Is it your idea that the students should work on the land themselves or that they should get enough to let out to tenants?—I think they should work on it themselves. There is no use in letting it to tenants.

15225. How many acres could the students work by themselves?—I cannot give any accurate information.

15226. Can you estimate how much is the income they would make?—They could get labour to help them.

15227. I understood that you wanted them to get first hand experience by working themselves?—But of course the student would direct the labourer and he would work himself also.

15228. Have you made any attempt to work out the income that he is likely to earn?—No.

15229. Do you not think he may find Government employment a good deal more profitable?—He does, I think. That is why he goes in for it.

15230. *Dr. Hyder:* In answering a question put by the Chairman (I do not know whether I understood you correctly), you said the income of an ordinary cultivator was roughly Rs. 60. Did you refer to the gross income or the net income?—The net income.

15231. That is to say, after deducting the cultivation expenses?—Yes.

15232. That would be about Rs. 5 per mensem?—Yes.

15233. And you took a family of 5 persons?—Yes.

15234. Rs. 5 for a month would be Rs. 60 per annum; that would be about 2 annas and 8 pies per day?—Yes.

15235. Half of that for one meal would be 1 anna 4 pies. Is that so?—I think they hardly get one meal a day.

15236. I want to make things clear. It comes to 1 anna 4 pies. Can you tell me what is the price of *cumbu* or *cholam*?—You can get about 7 to 8 measures of *ragi*.

15237. Can you give it in Imperial seers?—I cannot do that. I am not sure what a measure is in terms of pounds, but I think it is 1½ seers or 3 lbs.

15238. But how much could they buy for 1 anna 4 pies?—I shall have to work that out. They could buy about 40 measures for Rs. 5.

15239. That is to say, 8 Madras measures per rupee? And a measure means 1½ seers?—That is what I think.

15240. That is, 12 seers per rupee?—Yes.

15241. Is that what your people use?—The indigenous classes in my district use *cumbu* and *cholam*.

15242. They cannot buy very much for 1 anna 4 pies?—No.

15243. How do they manage to live?—Somehow they manage to eke out a living. If you went to a village and saw a specimen of the physique you will come to know how hard put they are to make both ends meet.

15244. Are there any industries in your district?—They go out, as I said, during the slack season to the ginning factories.

15245. Your district is Salem?—Yes.

15246. I find from the table of occupations of your district that about one-third, about a million and a half, of your people are agriculturists and 205,000 are engaged in industries; and I find there is a good deal of mining in your district; is that so?—Not in my part of the district.

15247. What is the name of your sub-division?—Tiruchengode taluk.

15248. Is not the value of land in Tiruchengode Rs. 2,000 per acre?—It depends on the quality of the land. As a matter of fact the rate for dry lands is Rs. 1,000 per acre.

15249. And if it is river-bed land?—If it is garden land it is more. I know of garden lands which are sold at Rs. 2,500 an acre; and for wet lands under the Cauveri river irrigation in the Erode taluk, I know as much as Rs. 5,000 to Rs. 6,000 have been paid per acre; if you calculate the rate you will find it is hardly 2½ per cent. on the capital outlay.

15250. This matter requires looking into: the income of a family per diem is Re. 0-2-8; surely there must be something left out?—I think Rs. 5 is the income of the average family per month.

15251. I want to know about marriage expenses. You know there is a good deal of expenditure on feastings and things of that kind; but is not the man reimbursed by his caste fellows?—I said in reply to a question put by

the Chairman that they give in the shape of *Moi* and he generally returns the loan in course of time in wedding presents.

15252. So it is a sort of mutual benefit system?—Yes.

15253. With regard to water rates, I understand your people are prepared to pay the value of the water and the Tanjore people are not?—I did not say that. Tanjore people are prepared to pay Rs. 15 per acre and people in my district Rs. 25 per acre. What I suggested before to the Commission was that the whole scheme should be worked out by the Government to see what would be the productive rate and that rate should be charged all round.

15254. Even allowing for local circumstances, does the value of the water vary very much between Tanjore and Salem, even allowing for the fact that your district is a dry district?—I think being a dry district people will consider water more valuable, because this district is accustomed to grow cotton. Irrigated cotton here is more valuable than irrigated paddy in Tanjore.

15255. But the value reflects itself in the price of paddy. Your man who grows *cumbu* or *cholam* or *ragi* realises the same price as the man in Tanjore realises for his paddy?—No; you get more for paddy than for cholam.

15256. Suppose you put your land under paddy. Would you get the same price in Madras as the man growing paddy in Tanjore?—No; paddy land is more valuable.

15257. I am talking about the price of rice?—Rice is more valuable; you get 4 measures of rice per rupee, whereas you get 8 measures of *ragi* or *cholam* per rupee, Madras measures.

15258. The price of paddy is the same in both the places?—Yes.

15259. There is no reason why they should not pay the same amount to the Government for irrigation?—They have got to pay a larger amount. They want Rs. 28 per acre for Salem as compared with Rs. 15 in the Tanjore district. Salem is prepared to pay Rs. 25.

15260. You say that the Government should do more for starting these co-operative societies for production?—Yes.

15261. Could you tell me, as you have some experience of the working of the co-operative credit societies, if it is not a much more difficult affair than the simple arrangement of co-operative credit societies?—Yes, the society for production is a more difficult affair.

15262. What do you want for the success of such a society?—You have to educate the people towards the advantages of a co-operative society for production.

15263. Would you agree with me that if you have got a really good manager, a man who is interested in the business of manufacture and also in the business of selling, then that would be one factor of success? Another factor is that they should have a very good Chairman for the Society?—Yes.

15264. The third requisite is that they should not sink too much of their money in the erection of expensive buildings?—Yes.

15265. They must have a rapid turnover?—Yes.

15266. Would you agree with me that they must have a quick settlement of accounts?—Yes; they ought to.

15267. *Dewan Bahadur Raghavayya:* I believe you know that there are some types of improved lifts worked by cattle power on the East Coast, in the South Arcot district for instance, which do not involve so much strain on the bullocks, the bulls walk on the level ground and so on?—Yes; in my district they work on an incline.

15268. That is the old way of lifting the water. Why has not this lift been introduced in your district?—I do not know why; I have not tried it myself.

15269. The lift has not been demonstrated in your district?—No; it has not been demonstrated.

15270. You suggest joint farming, failing consolidation of holdings?—Yes.

15271. I believe in your experience you must have heard of the inefficiency of the joint family system in Malabar and the great dissatisfaction that prevails in Malabar families where property is held in the name of one joint family and the manager looks after the whole property? You think that is a proper solution of the question?—I think it is a matter of opinion. I do not know if the joint family system has failed in Malabar.

15272. I have five years' experience in Travancore where the conditions are very similar to those in Malabar and the dissatisfaction became so great in Travancore that we had to change the law in Travancore, introducing inheritance by individual partition?—Yes.

15273. I gather from what you said that there are dry areas in your district which admit of a number of wells, where increase of wells would be desirable in the interests of cultivation?—Yes.

15274. Under the Estates Land Act, talking of zamindari areas, if the proprietor effects an improvement at his own cost, he can raise the rent?—Yes.

15275. Have you undertaken the sinking of wells in the dry area which admits of well sinking? You can raise your rate of rent, perhaps the dry rate, from Rs. 1-10-0 and the garden rate from Rs. 4-12-0?—I have tried sinking of wells in three or four cases and generally they are not willing to pay; now I do not sink wells.

15276. But if you do that the Act enables you to get a higher rent?—Then I will have to go to the court to collect the rent and so far I have avoided going to court.

15277. The Act allows it?—Yes.

15278. *Mr. Calvert:* You mentioned that you have read Mr. Darling's book on the Punjab. Would you think that the conditions which he described there, speaking very broadly, would be applicable in Madras?—Yes; I think it will be very useful to apply it.

15279. Do you think it would be an advantage to your Province if you had a man like Mr. Darling in your Province, an expert in rural economics?—I think so.

15280. *The Chairman:* I want your experience about roads. Do you think your roads under the local authorities are worse than they used to be?—That is my opinion. Since the non-official agency took over charge of the roads I find in my district the roads are worse than they used to be when the Collector used to be the President of the District Board.

15281. Is there any pressure by local electors, that is to say, the rural population?—I am afraid the rural population understand very little of these things. They get excited during the election time and they forget everything afterwards.

15282. One question on your estimate of the net income of the ordinary cultivator. I think you put that figure at Rs. 60?—Yes.

15283. Was that in addition to the grain reserved by the cultivator for his year's consumption, if he does reserve grain?—Yes; in some cases in addition to what he reserves.

(The witness withdrew.)

Rao Bahadur C. V. S. NARASIMHARAJU, M.L.C., Landholder, Vizagapatam, Madras.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(c) No research work is undertaken at present in fruit culture and millets except *ragi* and *cholam*. The research work done by the department regarding ground-nut and jute is not at all appreciable.

QUESTION 2.—AGRICULTURAL EDUCATION.—(i) The number of institutions are insufficient. There is only one Agricultural College for the whole Presidency. There ought to have been one for the Telugu districts.

(ii) There are no teaching facilities in any of the Telugu districts at present except in the Vizagapatam district, and another that is being started in Chittoor district.

(iii) The teachers in rural areas need not necessarily be drawn from the agricultural classes.

(iv) The attendance at existing institutions is not numerous, the reasons being (1) distance of the institutions, (2) want of sufficient publicity and (3) want of useful career thereafter.

(v) There are no incentives which induce lads to study agriculture at present. The whole educational system is to be revised so as to give an entire agricultural bent from the beginning. Certificates, Diplomas and University Degrees in Agriculture shall be adopted along with the general education and shall form part of it so that lads receiving education may have a general grounding in agriculture and may have useful careers opened for them.

(vi) The pupils at present are not mainly drawn from agricultural classes.

(vii) The old system of Madras of 2 years course in agriculture may be reintroduced in several districts.

(viii) At present in rural schools practically no work is being done in (a) nature study, (b) school plots and (c) school farms. The teachers employed in rural schools have no sufficient grounding to undertake this sort of work. If persons that studied in agricultural middle schools and colleges are employed as teachers in rural schools better work can be expected to be turned out by them in this direction. All the training schools for teachers of elementary schools, may be attached to the existing demonstration farms and the teachers under training may be made to work in those farms.

(ix) Most of the students who have studied agriculture are seeking Government employment on account of the attractive pay they receive. A rule may be adopted that after 10 years' service every one who studied agriculture shall be retired compulsorily so that he may take to agriculture after retirement.

(xii) The adult education in rural tracts can be popularised by adopting a system of capitation grants to adults receiving general education.

(xiii) The administration of rural education may be left in the hands of the local bodies as at present: These local bodies have not got financial resources to provide better educational facilities in rural areas. The Provincial Governments have to provide the entire cost of elementary education.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(a) Propaganda work is successful in influencing and improving the practice of cultivators. The agricultural propagandists employed by the Government are coming in contact with cultivators and are influencing them to adopt improved methods of agriculture. But the number of such propagandists is not sufficient.

(b) and (c) Cultivators may be induced by agricultural propagandists to cultivate a portion of their fields as per instructions given by the propagandists or Demonstrators and some prizes may be awarded to the cultivators that adopt improved methods of agriculture. There are, I think, in certain dis-

tricts institutions called agricultural advisory boards who give a certain amount of encouragement to people who take up agriculture under improved methods.

(*d*) I am acquainted with the success of demonstration work done in Sarvasidhi taluk, Vizagapatam district, in the matter of sugarcane cultivation. This is the result of the active work done by the Demonstrator.

QUESTION 5.—FINANCE.—(*a*) For want of funds the cultivator is handicapped in his agricultural operations. Co-operative societies are not able to meet even the demand for short-term loans. Agricultural land mortgage banks may satisfy the demand for long-term credit loans.

(*b*) Government *taccavi* loans may be given in the shape of agricultural seeds and manures through the Agricultural Department and such loans may be made a charge on the land and its products by legislation.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (*i*) The main causes of borrowing are (1) failure of crops, (2) social requirements such as marriages, etc., (3) construction of buildings, (4) capital expenditure for agricultural operations such as purchase of cattle, etc.

(*ii*) The source of credit is the value of the holding of the ryot to a large extent and he is dependent upon village moneylender.

(*iii*) Failure of crops.

(*b*) Special measures are to be taken to start agricultural land mortgage banks under Government agency for lightening the agriculturist's burden of debt. There are not many instances of rural insolvency. The application of the Usurious Loans Act may work hardship to the cultivator unless land mortgage banks are started.

(*c*) No measures should be taken to restrict or control the credit of cultivators. There is no practice of non-terminable mortgages to my knowledge.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) Though it is desirable in the interests of agricultural efficiency to reduce the excessive sub-division of holdings it cannot be affected having regard to the Law of Inheritance existing in the country.

(*b*) It may be possible by legislation to provide for exchange and compensation or for exchange for a definite period in order to consolidate holdings.

QUESTION 8.—IRRIGATION.—(*a*) New irrigation schemes are necessary in Vizagapatam district by way of constructing reservoirs and improving existing irrigation works. The main obstacle is want of legislation regarding irrigation.

QUESTION 23.—GENERAL EDUCATION.—(*a*) The agricultural efficiency of the people is not effected by want of education but improvement in agricultural practices and research work is greatly handicapped for want of higher education.

R. B. C. V. S. Narasimharaju.

Oral Evidence.

15284. *The Chairman:* Rao Bahadur Narasimharaju, you are a landholder in Vizagapatam?—Yes.

15285. You have been good enough to provide the Commission with a note of the evidence which you wish to give, and my colleagues and I have read it through with much interest. Would you like to make a statement of a general character before I ask you one or two questions?—No; I think my note covers all I wished to say.

15286. We are obliged to you for coming before us to-day in spite of responsibilities with which this Commission is not at all concerned. On page 569 you say: "No research is undertaken at present in fruit culture and millets except *ragi* and *cholam.*" Now, with regard to fruit culture, do you think there is considerable ground for fruit culture?—There is in my district, for tropical fruits, such as, mango.

15287. Tropical fruits?—Yes, tropical.

15288. Is that in your view a direction in which some progress might be made?—Certainly. For instance, mangoes and limes are exported from this Presidency in large quantities to various parts of India, but no attention is paid to these fruits.

15289. Do you think that preserving these fruits might be developed?—Yes; it might be developed. Of course some attempt is being made in Coonoor by Government, but even that is not a great success as far as my knowledge goes.

15290. The Commission has heard in evidence that among Indians there is very little demand for jams and fruit preserves; do you concur with that?—Yes, but sometimes a taste and a market for a particular commodity have to be created.

15291. And you think by judicious propaganda and advertisement a demand might be created?—Yes.

15292. There is nothing inherent in the dietetic customs of the country to prevent the extension of the use of fruit preserves?—I do not think so; there is an indigenous system of preserving fruits in some form or another.

15293. Is that capable of expansion on a commercial basis?—Yes.

15294. That is merely drying in the sun?—No; there is a system of putting it in honey and sugar preservatives.

15295. Under Agricultural Education on page 569, beginning with the lower grades of education, would you subscribe to the view that in the matter of elementary education literacy is the main objective rather than vocational training?—Certainly, as it is at present.

15296. Have you any views about the possibility of instituting vocational vernacular middle schools? Do you think there is a demand for such schools?—There is a demand but the system is purely of a literary nature and no attention is paid at present to any vocational training as such.

15297. No doubt there is in your mind the difficulty of providing an education which is at once technical and vocational in its nature and which does not at the same time bar the road to higher education in the Universities. Is that not one of the difficulties?—At present we have not got really any vocational institutions of that sort; but a system may be so devised that after finishing the middle school course, if the student is bright, he may go on to the higher education.

15298. Government conducts no such concerns, but I think certain missionary undertakings have made the experiment. You wisely say that if a boy shows himself to be brilliant he should be allowed to go forward?—Yes.

15299. If the boy has not received a training in English at a reasonably early stage in his school career, that is a great handicap to him on his way to the University?—I expect very soon the Universities will have the vernacular as the medium of instruction even in the high schools. That is how the Universities are now moving. Take for instance the Andhra University; we

have laid down that in that University the vernacular shall be the medium of instruction.

15300. You would rather frame the lower stages of education in your scheme in the belief that the Universities will use the vernacular as a teaching medium?—I expect that; that is the present national feeling in the matter.

15301. And would you expect to find the teaching in the agricultural colleges tending towards the vernaculars?—It must come, not just at present but in the very near future.

15302. You said in the future?—Yes.

15303. On page 569, paragraph (ix), you point to the fact, and it is one on which the Commission has had ample evidence, that most of the students who have studied agriculture are seeking Government employment on account of the attractive pay they receive. Do you deplore that fact?—I expect to see most of the students who receive education in the colleges go back to the land and cultivate it. The land does not pay them so highly as Government service; that is why they seek Government service.

15304. Precisely; and it is your view that human nature being what it is, as long as Government service offers more remuneration, that is the direction in which the majority of students in the agricultural colleges will look?—Yes.

15305. Would it be your ambition to endeavour to discover a system of instruction at the agricultural colleges which might have the result of persuading, at any rate a portion of the graduates, to turn their minds to agriculture as a commercial venture?—When we turn out a large number of agricultural graduates, and when they are not absorbed in Government service, naturally they must take to agriculture as a commercial venture.

15306. Do you know whether there are any indications of that at this moment?—I know of one or two instances, where graduates of the agricultural colleges are profitably employed in agriculture.

15307. I wanted to ask you a question about the efficiency of the propaganda officers employed by the Agricultural Department; (see page 569 of your note). In your experience are these officers in sympathetic touch with the cultivators?—Yes; as far as my knowledge goes regarding the work in my district I am quite certain that they are in close touch with the village population.

15308. And reasonably popular with the ryots?—Yes.

15309. Do you think the fact that these Demonstrators lack experience in management, in marketing, and in the general commercial side of farming, somewhat detracts from their usefulness to the cultivator?—I do not think that question arises at all. That is not the kind of work they are doing. What they generally do is to popularise certain varieties of crop and certain methods of cultivation. The question whether they are acquainted with the marketing and other things does not arise.

15310. It may not arise as part of the instruction which it is their duty to give, but it occurs to me that their ignorance of the commercial side of farming may shake the ryots' faith in their technical advice?—I do not think they are attempting that aspect of the question. They are simply doing propaganda work as to the variety of crops to be grown, how they are to be grown, the system of manuring and to other things of that sort.

15311. Are you personally familiar with the working of the co-operative societies?—No; I am not personally familiar with it, but I have a general knowledge of it.

15312. You cannot speak from your own knowledge as regards any particular society?—No.

15313. Have you formed a general view that the majority of these co-operative credit societies are sound?—They require a lot of supervision; at present my impression is that some of them are not very sound.

R. B. C. V. S. Narasimharaju.

15314. So that, you look forward to a somewhat prolonged period of official, or at any rate, expert, control and advice before these societies are able to stand on their own legs. Is that your view?—It looks like that.

15315. I observe on page 570 that you are definitely opposed to any proposal which might have the effect of limiting the right of the cultivator to mortgage his holding?—Yes.

15316. You think that might restrict his credit?—Certainly.

15317. And the restricting of his credit might have the effect of raising the rate of interest he has to pay?—Yes.

15318. On page 570 under Fragmentation, you point out that under the existing conditions of the law of inheritance and traditional practice in these matters it is going to be very difficult to avoid sub-division at the time of inheritance?—Yes.

15319. Do you think that sub-division as it is in practice performed sometimes leads to unnecessary fragmentation?—It does.

15320. People have opinions as to the relative value of various plots of land, and they insist upon having a share of every single plot?—The fact is this; conditions vary with regard to the various plots, and it is not possible to make an equal distribution among the sharers unless you resort to division of small areas.

15321. The cultivable value varies?—Yes.

15322. Do you think that the economic disadvantage of fragmentation is exaggerated, or do you think it is very important?—I think it is very important.

15323. The time wasted between plot and plot, is that it?—Except in the case of intensive cultivation the time and the men employed are uneconomic.

15324. The time wasted between plot and plot and to some extent, I suppose, fragmentation interferes even with the practice of tillage?—Certainly; supposing the land requires ploughing, if it is not sufficient in area a man naturally cannot work his bullocks economically and he has to go about from field to field.

15325. He cannot work his bullocks economically if at all?—No.

15326. Have you studied at all the experiments in consolidation of fragmented holdings on co-operative lines, which have been successful in some parts of the Punjab?—I have studied them.

15327. Do you think there is any hope of introducing that system into this Presidency?—I do not think so; my impression is this, that the moment you introduce it, the next moment the lands may be sub-divided again by the sons.

15328. You do not think, having experienced the enormous advantages of consolidation, the people might insist upon its perpetuation?—Suppose the land is to be sub-divided amongst 3 or 4 brothers, one taking the land and the others being compensated by money. It may be a desirable thing, but the question is whether it can be effected, having regard to their conditions.

15329. Under Irrigation, on page 570, would you mind telling me exactly what you mean when you say: "The main obstacle is want of legislation regarding irrigation"?—It was stated many times that many schemes were held up by Government for want of an irrigation law, a statute law on irrigation. At present, on account of the permanent settlement, the zamindars have already some vested rights in the water, and any big irrigation scheme interferes with the existing vested rights of the zamindars; the present law does not allow Government to interfere with such rights, and unless there is some interference, these schemes cannot be executed. Many schemes that were investigated were held back for want of an irrigation law, then Government attempted to make such a law, but it was dropped.

15330. Where are your own estates situated?—In the Vizagapatam district.

15331. On what size of holding do most of your tenants work?—In one of the villages which belongs to me there is sugarcane cultivation, and the hold-

ings are not less than 12 or 15 acres, because it requires rotation of crop; but in two other villages, of which one is a dry village, the extent of the holding is generally 2 acres to 4 acres, or something like that.

15332. *Professor Gangulee:* Such a wide difference?—Yes.

15333. *The Chairman:* Under your sugarcane cultivation, do you happen to know how much water your cultivators are using now per acre?—I cannot say.

15334. Are those cultivators growing nothing but sugarcane?—The thing is that sugarcane is generally a rotation crop every 4 or 5 years. They prefer to have it once in 5 years but in small holdings they have it once in 4 years, the remaining portion is cultivated with paddy and other crops.

15335. It is a rotation between paddy and sugarcane?—Yes.

15336. When was the sugarcane introduced into that district? Is it a crop of long-standing?—It is of long-standing in two of the districts of the Presidency that produce the heaviest crop.

15337. How about marketing? In your experience, are the marketing arrangements satisfactory from the cultivator's point of view?—The fact is that if he sells at the time of production, he realises a low price, but such of them as can store, do realise higher prices after six months; they take the jaggery to the nearest market, which is about 18 miles from the village.

15338. And they take that themselves?—Yes, they take it themselves.

15339. Do you mean to say that many of them have no capacity to hold the produce for a better market? Is that the situation?—To realise better prices.

15340. For a better market. Are they in debt?—Some of them.

15341. Where do they borrow, as a rule?—From the *sowcar.*

15342. Is it the custom for landholders in your district to lend?—I do not think they generally do it.

15343. *Sir Henry Lawrence:* On the question of legislation in regard to irrigation, to what points do you consider that legislation should be directed?—Government have now no power to take the water and control its supply where vested rights exist.

15344. Is that some new power?—According to the existing law, as interpreted by courts, Government have no right to interfere with vested rights, and if special damages are proved, Government are liable for damages.

15345. In speaking of new irrigation schemes in answer to question 8, you say that new irrigation schemes are necessary in Vizagapatam; I am not quite clear what vested rights there can be in these villages?—Most of them are permanently settled; Government villages are very few in number, and Government have no right of interference at present with vested interests; and unless Government interfere with the existing rights, they cannot construct any big irrigation schemes.

15346. For that purpose, they require a special Irrigation Act, dealing with permanently settled areas; is that the point?—Government will have to legislate, taking power to interfere with existing rights; where the existing rights are affected, Government will have to pay compensation, and where they are not affected, the zamindars may get the existing supply of water.

15347. Is any Bill being drawn up?—A Bill was introduced and passed by the Legislative Council, but it was returned for consideration by the Council on certain points.

15348. Was it returned by the Governor?—Yes, and at that stage the Bill was allowed to be dropped with the consent of the Government.

15349. What you are urging is that that particular Bill should be reintroduced?—I think so; my impression is that unless this Bill is introduced again, Government cannot proceed with any irrigation schemes.

15350. In regard to Vizagapatam?—Not only that, they cannot proceed with any schemes in the Presidency.

15351. Does it apply to the Tungabhadra, the Kistna and the Mettur projects?—I know it does apply to the Mettur project.

15352. As to the other 2 you are not certain?—I have not studied the details.

15353. It is the lack of that law which prevents Government from proceeding?—That is what they told us several times.

15354. You make a suggestion that men in Government employment may be compulsorily retired after 10 years' service?—I am referring to those who receive agricultural education.

15355. Will that not have the effect of making such agricultural education unpopular amongst newcomers?—I do not like to waste public money simply on Government servants only; education is intended for the benefit of the public, and not for getting Government servants.

15356. You consider that, if there was such a rule, you would still be able to fill your agricultural colleges?—I expect more to come forward, because there will be rapid replacement and there will be scope for more men to be employed, and with sufficient experience on the Government farms they can go back to the land and cultivate. I expect them to have sufficient money to start their private agriculture.

15357. So that the prospect of having 10 years in Government service would be sufficient to induce the boys to take up this agricultural education?—I believe they will have sufficient money to start their agricultural operations.

15358. My point is a little different; will you get boys to come into the Agricultural College on those terms?—That, I cannot say, I would like to make an experiment.

15359. *Sir Ganga Ram:* Yours is a dry area?—It is both wet and dry.

15360. Where do you get the irrigation from?—From small hill stream.

15361. No irrigation project has been made for you?—The water from the river will be *bunded* up.

15362. Are you allowed to *bund* up the water?—Yes.

15363. In the river?—Yes.

15364. *Sir Henry Lawrence:* What river?—It is a small river, the Varaha.

15365. *Sir Ganga Ram:* Do not the people below object to it?—I have got an established right.

15366. You are in the permanently settled area?—Yes.

15367. In a permanently settled area, it is a vested right of the zamindar to undertake new irrigation schemes?—He has no such right.

15368. Supposing a new scheme is made out, the Bill will be required to charge them something?—I do not think you understood me correctly. Suppose there is a river and the zamindar has got the right to *bund* it up and get a certain quantity of water. Now, the Government scheme proposes to *bund* up the whole river and construct a reservoir there Government have not got the power, under the existing law to do that, because it might interfere with the zamindar's vested rights. Legislation is required empowering the Government to interfere with the right and *bund* up the river entirely and construct a reservoir. So far as my vested right is concerned they may give me compensation or give me the quantity of water which I am getting at present.

15369. From the new scheme?—Yes, from the new scheme.

15370. *The Raja of Parlakimedi:* Of course, they can *bund* up the river without prejudice to the supply further down?—That is what I have said; they may give me the quantity of water which I am entitled to get.

15371. *Sir Ganga Ram:* Are you entitled to *bund* up the river? Because you have been doing it?—Yes.

15372. There is no other right?—It is a right; the law presumes a grant in the past.

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15373. Do you grow sugarcane on well irrigation or canal irrigation?—Mine is not a perennial river; for about 8 months in the year there is water in the river and I utilise that; for the remaining 4 months I utilise well irrigation.

15374. Do you not pump the water from the river?—The water flows into my fields.

15375. For the remaining 4 months, can you not pump up?—The river dries up; it is not a perennial river.

15376. Are wells sunk in the bed of the river?—They are sunk in the fields.

15377. How far is the spring level from the ground?—About 11 feet.

15378. Do you have circular wells or rectangular wells?—Circular.

15379. How many acres of sugarcane can one well irrigate?—About one to two acres.

15380. You do not know what discharge it gives?—No.

15381. How do you pump it, by what method?—By the *piccotah* system.

15382. That is, they have it inclined?—No, that is not much in practice in my district. We have what is called the *piccotah* system, it is a sort of see-saw system.

15383. Can it give sufficient water for the sugarcane?—Yes.

15384. *The Chairman:* Would you mind describing the system you mentioned now?—There is what is called a pivot first. That is about 6 ft. above the ground, and there is a bar of palmyra wood or something like that. It works like a see-saw.

15385. *Sir Ganga Ram:* Have you got a copy of the Bill that you say was dropped? Can you give me a copy of it?—The Madras Government can easily supply you.

15386. Can you give the year?—It was dropped last year; it was passed by the Council in December 1924 and it was dropped by the Government in 1926 August or September.

15387. It was passed by whom?—By the Madras Legislative Council.

15388. Dropped by whom?—By the Madras Government. It was allowed by the Madras Government to be dropped, to be more correct.

15389. *Sir Thomas Middleton:* You express the view that it is not necessary that teachers in rural areas should be taken from the agricultural classes. I want first to ask you what you have included within "Agricultural Classes." Do you include the land-owning classes, or are you thinking of the ryots?—I am thinking only of the ryots.

15390. What is the reason why you think that it is not necessary?—I do not find any special advantage in confining them to a particular class.

15391. You do not think the supply would be sufficiently good if you confine it?—Absolutely not because most of them do not go in for it.

15392. That is the point I wanted to bring out in your answer. You say there are no incentives which would induce lads to study agriculture at present. What kind of incentives would you like to see?—I expect if lots of agricultural students go back to the land and produce better crops, it will be an incentive. Human nature is to imitate, and at present there are not many examples of that sort.

15393. What you mean is that there are no examples of successful cultivation by passed students?—Yes.

15394. You suggest that you should go back to the old plan of a two years' college course in Madras. Was that course not abandoned because the number of students fell off?—That is what I was told.

15395. What made you so definitely recommend the reintroduction of the two years' system?—The point is this: Most of the landlords' sons are expected to take to some course after their School Final or Matriculation classes and that is the class that is recruited to the two years' course. Now,

the College expects an Intermediate student to go to the Agricultural College for the B.Sc. Course.

15396. Your argument therefore is that the class of young men who are most likely to return to the land are not being provided for?—Yes, and most of the young men who pass the Matriculation may give up their studies; if we have the agricultural schools of the two years' course type, I expect a good number of men belonging to the agricultural classes may go and study. They used to study like that in the past.

15397. When you say they used to study, are you referring to the old Saidapet Course, or to the Coimbatore Course?—Even in Coimbatore, till 1923, I think they used to do it.

15398. You expressed the view that the number of Demonstrators is not sufficient. Now taking your own district, could you give me some idea as to the increase you would like to see? Would you like to double the number?—No. At present one man is put in charge of a taluk consisting of about 150 villages. I cannot expect him to be in touch with more than 10 or 15 villages. He is expected to visit a village at least once a week or say, at least once a fortnight, so that he may be in touch with the people and instruct them how to carry on their cultivation.

15399. So, to meet your desire, we should have to increase the number from 1 per taluk to about 15 or 20 per taluk?—Certainly, if you want to do really useful work for the cultivator. That is the surest way; at least put him in touch with the agricultural methods.

15400. I am not quite clear as to your meaning, in the view you express on page 570, about general education but I think I understand what you mean. Your point is this that the actual technical efficiency of the existing agriculturist is not affected by want of education; but he is unable to take advantage of any improvements because he is not literate. That is the point you wish to bring out?—Yes.

15401. You complain of the lack of teaching facilities in the Telugu districts?—Agricultural teaching.

15402. You indicate that there ought to be an agricultural college for the Telugu districts, in addition to the one existing. Are there any other teaching centres which you would desire to see?—At present there is one agricultural middle school in the Telugu districts. I was told that the Government are starting one agricultural middle school in the Chittoor district.

15403. In the districts to which you refer what do you think the number of schools should be if one were aiming at a complete scheme?—If you really want to introduce agricultural schools, say where you give a diploma course or something like that, I believe there will be sufficient material for one school for each district.

15404. And when you are talking of Agricultural High Schools, you are thinking of the sons of the landowning classes?—Yes.

15405. *Dr. Hyder:* You say on page 569 of your evidence that the Provincial Government have to provide the entire cost of elementary education. Out of what funds?—Out of the funds of the Provincial Government, as opposed to the funds of the local bodies.

15406. You mean to say that the Government should increase the grant by another 50 per cent?—It is absolutely insufficient. Now the education cess that is levied by local bodies is not more than, say 18 lakhs or 20 lakhs. I expect at least 2 crores of rupees will be required for complete elementary education in the Presidency to provide at least one school for every village of 500 or 400 of population.

15407. Would you like the cess to be general and to be levied in all districts of the Presidency? What is your idea?—I am not here to suggest how the Local Government is to find the money. If I had anything to do with the Government, I should certainly curtail other expenses.

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15408. Should the Local Government give up some of its present activities? —Not activities, but there is an enormous waste of money according to my view and the services are paid unnecessarily highly.

15409. You make an interesting suggestion here that these people who are in agricultural service should retire after ten years. Would you give them pensions?—Yes, just enough to allow them to carry on agriculture.

15410. Would you like to give them lands also if they have not got lands? —Certainly.

15411. There is a District Educational Council in your district, Vizagapatam. How is it working?—You mean the secondary or elementary education council instituted under the Madras Elementary Education Act of 1921?

15412. Yes, constituted under that Act?—I was for nearly three years President of the Educational Council. I was not satisfied with its work.

15413. It has not got enough resources?—It is a mere agent of the Government. Government gives so much money and distributes the grant among various councils.

15414. You would like the people to tax themselves and have the finances in their own hands?—I would like to make it an autonomous body with its own financial resources. I have got my own theory of finding funds.

15415. Would you like the State to be financially interested in land mortgage banks also?—Yes.

15416. You do not think they could be run by the people themselves?—In the village there is not sufficient material to run these banks.

15417. I am not speaking of management; but the financial credit?—Just as co-operative banks are getting some deposits, they may get some deposits; but I am not too hopeful.

15418. Is adequate use being made of *taccavi* in your district?—I do not think so; it is a very circuitous method. The application has to be made in good time; there is much difference of time between the date of the application and the date of the grant.

15419. *The Chairman:* Is there any difference between the sum allocated and the grant received? Is there leakage between one point and another point or does the ryot receive 100 per cent. of what has been sanctioned?—There is any amount of corruption; but whether there is corruption in this particular department and in this particular system I cannot say.

15420. *Dr. Hyder:* In the zamindari areas, do you think you have got a sufficient number of wells?—You mean wells dug by the cultivators?

15421. Yes?—Yes. Even the zamindari areas get loans under the Land Improvements Act.

15422. You think you have got a sufficient number of wells in the zamindari areas?—Not sufficient but I do not make much difference between the zamindari and the Government villages in that respect.

15423. *Dewan Bahadur Raghavayya:* As regards these colleges to which you have referred you say that you want one or two more agricultural colleges. Am I right in understanding that you want scientific and technical education to be imparted in the vernacular in those colleges also?—Yes.

15424. You think you have adequate scientific literature for that purpose? —I can create it shortly.

15425. Within what time?—Two years are quite enough for creating a scientific literature in the vernacular.

15426. Your idea is that this scientific education should be given all along the line in the vernacular?—Yes. I will make English only optional.

15427. What is your reason for it?—I expect the students to receive instruction very easily and with great advantage in the vernacular instead of in the foreign tongue.

15428. That is your reason?—Yes.

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15429. I suppose it is also your reason that it would make it much more effective among the people. The effect would be much greater if it was in vernacular?—Yes, certainly.

15430. You have one school in the Telugu country, a Municipal Agricultural School at Anakapalle. We are told that it has been a failure. Do you think it has been a failure?—I find there is a fall in the number of students, but I have not investigated it sufficiently.

15431. Do you not think it is worthwhile investigating the causes for the unpopularity of that school?—Certainly.

15432. I understood you to say that in the case of these agricultural officers, Demonstrators and men above them, a knowledge of commercial aspects of agriculture, and of marketing is not necessary. Is that so?—I have not come across that aspect.

15433. You have not considered that aspect?—I have not seen any Demonstrator doing that sort of work.

15434. If a Demonstrator could explain the commercial aspect of agriculture and better methods of marketing, do you not think that he would enable the ryot to see that agriculture can be a much more paying proposition than it is now; in that way the effect of propaganda work could be enhanced?—I am not able to follow you when you say 'better methods of marketing.' What do you mean by that?

15435. It means creation of associations or co-operative societies where advances could be taken on the security of the grain produced, so that it might be sold at the proper season and better prices obtained for it. You can also have better means of communication and things like that?—I do not like to entrust that kind of work to the Demonstrator. If Government want to do that work, I think they can do it through the Co-operative Department Inspectors or somebody else.

15436. You do not like the Agricultural Demonstrator doing it?—I do not like to mix up both, because the Agricultural Demonstrator has now sufficient work in hand in instructing cultivators in the new methods of cultivation.

15437. In regard to this irrigation law, is there any matter in the ryotwari areas in the Government taluks and districts in regard to which the enactment of any law has been considered necessary?—If it is purely a Government area, no law is necessary.

15438. Then why do you say that the irrigation law has been considered necessary even in connection with the Cauvery-Mettur project?—In regard to special assessment, Government has got a right of levying Rs. 5 as the water rate.

15439. They are now levying it?—Of course the Act says that Government may levy at its pleasure as much rate as the existing law provides. But if you take up the question of levying a rate of Rs. 15 or 20 and if the scheme is completed and water is not taken, then Government will be put to an enormous loss. There is a special chapter in the new Bill, which provides a sort of way of ascertaining the wish of the people. That is, if two-thirds or more than half of the persons to be benefited consent to these higher rates, it will be a charge on the land to be paid for ever.

15440. If the majority consent, the minority can be compelled to pay?—Yes.

15441. For that purpose the enactment of the law is necessary?—We were told that the Mettur project was not undertaken for want of an irrigation law and the Government of India insisted that there should be an irrigation law before the Mettur project was undertaken.

15442. *Sir Ganga Ram:* Is it under consideration now?—I believe the Madras Government was entirely wrong in undertaking the project before the Irrigation Bill became law. As a Member of the Legislative Council, I did raise that question but it was shelved with some explanation.

15443. Surely the Secretary of State must have sanctioned it?—I read the whole correspondence and I think the Secretary of State was misled in the matter.

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15444. *Dewan Bahadur Raghavayya:* You talk of capitation grants being given to adults receiving general education. Is it not a large order? Would it be financially practicable? Do you think it is a practical proposition?—It is worth trying, in some localities.

15445. You say on page 570, "It may be possible by legislation to provide for exchange and compensation or for exchange for a definite period in order to consolidate holdings." You do not anticipate much opposition to that scheme?—My idea is this: when an application is made for consolidation, the Board goes into the whole matter and, if the Board comes to the conclusion that it is to the advantage of agricultural efficiency that consolidation is necessary, they may resort either to a lease for a fixed number of years or to compensation.

15446. You want to make the legislation permissive?—Yes.

15447. *The Raja of Parlakimedi:* On page 569, paragraph (*ix*), you suggest that officers in Government service with agricultural qualifications should be made to retire compulsorily after 10 years' service. Do you not think it will work as a hardship, unless they possess some land to go back to?—I have answered that already, that if Government land is available it may be given.

15448. Yes, but it is not available everywhere. You make a statement that there should be a sort of compulsory retirement?—After 10 years' service I expect the Government servant to find his own resources; I expect him to be very resourceful.

15449. Do you think it is practicable that after ten years' service he will create land?—My idea is that if he is a poor man to start with, he will have laid by some money in 10 years, and I expect him to be resourceful enough to find some land and cultivate it.

15450. But do you not think it is better if you modify the statement by adding 'people possessing land'?—Then the man in service will certainly sell his land.

15451. Why will he sell his land?—Because otherwise he will be made to retire. I say I expect the man to be very resourceful and find the land for himself after ten years' service; if he does not cultivate that much ability during the ten years' service, then he is not fit to continue in the Government service.

15452. *Mr. Kamat:* How much do you think he can save in Government service after ten years?—I cannot say that; I expect him to have sufficient money to start agricultural operations.

15453. *The Raja of Parlakimedi:* It is simply your supposition, I think?—Yes.

15454. Then on page 569, with regard to question 3 (*b*) and (*c*) you say: "There are, I think, in certain districts institutions called agricultural advisory boards who give a certain amount of encouragement to people who take up agriculture under improved methods." Do you want your suggestion to be supplementary to that or to be adopted where there is no such board?—The thing is this; the boards you speak of are non-official bodies that are in existence in some districts and the work turned out by them is not at all satisfactory. I was myself secretary of one such board for 5 or 6 years and such boards have no expert men employed by them; they did no propaganda work. Of course the Vizagapatam Agricultural Association did appoint two propagandists, but the finances they could command were not sufficient to maintain them. I cannot speak of other boards; I have no personal knowledge of them.

15455. In Ganjam it did work fairly successfully?—I have no knowledge of that.

15456. It depends upon the interest taken by the members forming such boards?—Certainly.

15457. One last question under *taccavi* loan. Do you want seeds and manures to find a place under the loans or do you want seeds and manures to have preference over wells and other things?—*Taccavi* does not provide for.

well construction. *Taccavi* loans are always confined to the purchase of seed, agricultural implements and things of that sort. The construction of wells comes under the Land Improvements Act. *Taccavi* is quite different from that.

15458. The help is given for the improvement of irrigation?—I do not think you can classify it under *taccavi* loans. My impression is that it is for agricultural operations that *taccavi* loans are given.

Dewan Bahadur Raghavayya: They are given for both purposes.

15459. *Professor Gangulee:* Have you a home farm?—Yes.

15460. Are you depending on the income of the tenants for your livelihood or have you other sources of income?—The income from the land is my main income or the chief income.

15461. Have you had occasion to study the rural problems of your district yourself?—To some extent, yes.

15462. Of your own constituency? I think you are returned to the Council from a rural constituency?—Yes.

15463. Have you studied the rural problem of that particular constituency?—In what aspect?

15464. In all its aspects?—I cannot boast of having studied it in all its aspects.

15465. With regard to agriculture?—Yes, to some extent.

15466. Among the cultivators of that particular constituency have you any idea as to how many are cultivating owners of land and how many are mere cultivators, that is tenants?—I cannot give you any exact information about that. My impression is that about 80 per cent. are owners and the rest cultivate land on sub-lease.

15647. 80 per cent. are owners?—In the sense that they are zamindari ryots and Government ryots, they are owners of the land.

15468. What are the principal food crops?—Paddy, *ragi*, *cumbu*.

15469. Do you find any new money crop coming in of late?—You mean industrial crops?

15470. Yes?—Ground-nut and jute.

15471. Which is making headway, ground-nut or jute?—I think ground-nut is making headway.

15472. It is replacing some of the acreage under food crops?—Certainly.

15473. Do you think that is a healthy symptom?—I know that the ryot is getting more money into his pocket.

15474. Do you not think it is desirable if it helps him to raise his standard of living?—Yes.

15475. Is there any agricultural farm in your taluk?—In my district there is one at Anakapalle; not in my taluk.

15476. Is it receiving the amount of attention and appreciation from the public which it deserves?—I cannot say.

15477. Have you visited the place?—Yes, many times.

15478. We were told by the Director of Agriculture that the school at Anakapalle was not a success. Have you been in touch with the Director of Agriculture to find how you can better the situation?—I came to know only very recently that it was not thriving.

15479. You have had no occasion to discuss the matter with the Director of Agriculture?—No.

15480. I find from your précis that you attach a great deal of importance to demonstration and propaganda?—Yes.

15481. And you agree that if you could have more agricultural propagandists and more demonstration farms you could gain better results?—Yes; I do not attach much importance to the demonstration farms under the Government; I attach more importance to the Demonstrators themselves who go and

instruct the cultivators and ask them to set apart special plots and cultivate them on the latest methods.

15482. You attach no importance to the demonstration farm where things could be shown?—My impression is they are not much resorted to by the cultivator.

15483. *The Chairman:* You prefer demonstration on the ryot's own holding?—Yes.

15484. *Professor Gangulee:* Do you want demonstration on agriculturists' own holdings, or do you rely on descriptive lectures?—They are not giving descriptive lectures, but they are inducing the ryots to set apart certain plots of their holdings for cultivation on improved methods.

15485. You approve of that?—Yes.

15486. Do you agree with me that propaganda for popularising hand-spinning and weaving has been carried on intensively in recent years in this country?—Yes.

15487. And it was done with the help of all the resources the politicians could command. Are you satisfied with the result of that propaganda?—There has been a very good effect, but I do not think it was carried on to the extent it could have been done; it was not sufficient.

15488. Did that propaganda make an impression on the masses?—It had a lasting effect on the masses.

15489. On the masses?—Yes.

15490. Are you connected with any local bodies?—I was President of the District Board of Vizagapatam, and also President of one Taluk Board.

15491. Do you think that local bodies have done their share in the task of rural betterment? It is a very general question, but I want your views on it?—Their main attention was given to improving communications and water-supply and to providing elementary education; those were the main branches of their work.

15492. Of these let us take communications first?—With regard to communications, there is no perceptible improvement.

15493. Water-supply?—There was improvement as long as the Madras Government or the Government of India gave grants.

15494. And with regard to education?—That is entirely dependent upon Government grants.

15495. Have you taken advantage of the permissive legislation on compulsory education?—Not in my district.

15496. Are you still the Chairman of your District Board?—No.

15497. You take an active part in politics. Can you kindly tell the Commission whether the Legislative Council has shown an adequate interest in agricultural and rural questions generally?—The fact is this. The representatives of the people did take interest by moving resolutions for the improvement of agriculture, and none of the Government's demands for grants for agriculture were ever questioned. The tendency was to encourage demands for greater grants.

15498. Do you envisage a time when the Agricultural Department of the country will not be subject to political changes and chances?—I do not think I understand the question.

15499. Taking into consideration the general political trend of the country, do you envisage a time when the agricultural policy of the country will not be subject to political changes and chances? Do you think it is desirable that such a time should come?—May I know what you mean by "agricultural policy"?

15500. By "agricultural policy" I refer to rural reconstruction, better agriculture, better food?—I do not think it will ever become a matter of difference in political views.

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15501. Therefore you agree that any rural reconstruction policy should be immune from political infection?—I do not think that rural reconstruction will ever be an important factor of political cleavage.

15502. I do not mean that. Supposing we have a resolution in the Council for rural reconstruction, will there be any walk-in and walk-out gestures with regard to these matters?—A walk-in and walk-out policy was on account of the dissatisfaction against the system of Government, it had nothing to do with agricultural policy.

15503. *Mr. Calvert:* On the question of agricultural indebtedness, is the total of the debt increasing or decreasing in your opinion?—I cannot express an opinion.

15504. Have the moneylenders in your parts any alternative method of investing their money?—They invest their money mostly in moneylending.

15505. Is there no other opening except money-lending?—No. Of course some of them invest in trade and other things.

15506. Are they taking to buying shares on the stock exchange?—Not at all.

15507. What are the usual terms of mortgage in your part of the country? Is it generally with possession?—When the village sowcar lends money he generally does not take usufructuary mortgage; he always lends on simple mortgage.

15508. Have these got to be reduced to writing or are they just registered in the district records?—They are compulsorily registrable by law if the amount exceeds Rs. 100.

15509. What are the usual terms of redemption?—From five to ten years.

15510. It is usually a fixed term?—Yes.

15511. At the end of that term the mortgagee has to pay the principal with interest?—Yes.

15512. *Mr. Kamat:* Your proposal is to penalise every man who has studied agriculture with compulsory retirement at the end of 10 years; you assume he will have sufficient resources to buy land at the end of 10 years?—I do not call it penalising; I regard it as withdrawal of patronage by the State.

15513. *The Chairman:* Is it your proposal to retire every man with an agricultural training or only some?—I should like every man of the lower grades to retire. I should like to make a distinction between expert scientists and ordinary Demonstrators and others.

15514. Your wording is: "A rule may be adopted that after 10 years' service every one who studied agriculture shall be retired". I am following your wording?—I should like to make a distinction there. I do not want to be understood to propose that every one who receives agricultural education should be retired. Men who are employed entirely on the scientific side of agriculture may be assets to the State and should be allowed to continue their work; but men working as Demonstrators who do easy work of a routine nature should be retired.

15515. So that you desire to modify your statement to that extent?—Yes; I do.

15516. Are you not proceeding on another assumption, then, that every one compulsorily retired according to your scheme will necessarily go back to agriculture?—I expect him to go back.

15517. That is to say, he will either serve under Government or go back to agriculture?—Because there is no other service available in the country.

15518. *Mr. Calvert:* What about law?—Unless he goes again to the University and becomes a graduate he will not be allowed to get into the Law College.

15519. *Mr. Kamat:* You have made another proposal to popularise adult education by a system of capitation grants. Do you think the system is simple enough?—There was for sometime a system of capitation grants to teachers, and it was condemned by the educational authorities on account of various frauds likely to be committed and actually committed; they replaced

it by a system of inspection grants. These inspection grants are said to be not very satisfactory. I discussed this problem with some men concerned with education, and they preferred a sort of grant to adults themselves, so that the standard of instruction given might be tested. It may be given to the adult, and indirectly it will certainly flow into the pocket of the teacher.

15520. How much would your grant be per month or per annum?—About Rs. 7-8-0 per head per year in this Presidency.

15521. You mean for primary education?—Yes. Any grant in the neighbourhood of it may be sufficient.

15522. In other words you want to give Rs. 7 also to every adult?—Yes.

15523. Do you mean every adult teacher?—Every adult that receives education.

15524. You mean in night schools?—Yes.

15525. What is the percentage of your illiterate population going to the night schools roughly speaking?—As far as my knowledge goes, there are certain schools in my district where the number of adults that join is very satisfactory; but such schools are very few in number at present.

15526. As soon as they begin to get Rs. 7 a year, do you think they will begin to flock there?—At least, that is the opinion held by some inspecting officers.

15527. *Rao Bahadur Muniswami Nayudu:* You advocate the opening of an additional College of Agriculture in the Telugu districts. The Director of Agriculture has told us that the persons who are educated in the Agricultural College are mostly persons who seek Government employment and not persons who go back to agriculture. Do you concur with that statement? When there are sufficient educated men left in the country not absorbed into Government service, then naturally they will have to resort to agriculture as a profession.

15528. The Director of Agriculture also said in reply to a question of mine, that if there are no careers open to such students by way of Government employment, probably no one will join the Agricultural College. Do you agree with that?—No.

15529. So that, whether there are chances or no chances to enter Government service, you expect farmers' sons to take the agricultural education in future years in larger numbers.—Yes; I subscribe to that view.

15530. And do you think if an Agricultural College is opened in Telugu districts, farmers' sons in the Telugu districts will attend that college, in more numbers than they attend Coimbatore, and go back to agriculture rather than take up Government service?—Yes. If you have a college at Bezwada, you will have sufficient material from Godavari, Kistna, and Nellore districts.

15531. Is there anything now which prevents the people of those areas from going to Coimbatore to receive education in agriculture?—The difficulty is mainly one of finance, the cost involved and the distance. Moreover, the system of education is not at all popular.

15532. You mean education in English?—Yes.

15533. You are therefore advocating the opening of another college, even at a large cost, in the Andhra districts?—Yes.

15534. Did you at any time visit the Agricultural Middle School at Anakapalle?—Yes.

15535. Did you notice whether the boys taken in there were sons of farmers, who were expected to go back to the land?—Yes, most of them were, but the point is that they are recruited very early, when they are 13 years of age.

15536. What is your proposal with regard to the recruitment of such boys? What general education, do you think, they should have?—Now they are having boys who have completed the higher elementary course, and they are being recruited at a very early age, 13 or 14 years; secondly, they have not got any scope for higher education after finishing their education there in agriculture. I believe it has not produced much impression on the minds of the parents that it has any good effect on the boys.

R. B. C. V. S. Narasimharaju.

15537. You are aware that there is a Village Panchayat Act in this Presidency. What has been your experience as President of a District Board as to the success or otherwise of the village panchayats?—Not very many panchayats were started in my district.

15538. How many panchayats were started in your district?—Very few while I was President.

15539. Were all those few or a percentage of them successful?—I have not got any great impression of their success.

15540. Can you tell why it is that, though there is an Act, you are not in a position to induce the people, or the people are not willing, to form village panchayats?—I have always held the view that the main principle of the Village Panchayat Act is that they should tax themselves. I also hold the view that there must be some inducement by way of contribution from the District Board or Taluk Board or Government, even regarding the local taxes raised in the village. I think that is the main defect.

15541. Did you consider the question, as President of a District Board, of subsidising the panchayats which were constituted to some extent, and did you grant any subsidy?—As far as Union Boards were concerned, I did give large contributions from the District Board funds, but the number of panchayats were not appreciable enough, and I did not study that aspect of the question.

15542. That is just the reason; because the panchayats were very few you could have given more, but you did not move in that direction?—I did not; I first moved in the direction of the Union Boards, and it took a long time for Government to pass orders permitting the District Boards to give grants. Two or three months after that I retired.

15543. Have you any faith in the working of these panchayats?—I have got immense faith in them.

15544. You think that, given sufficient encouragement by the District Boards and the other Local Boards, the panchayats will be a success?—I think really local self-government must be taught there, and I am sure, if they are given good encouragement and proper guidance, they will have a very good start.

15545. Do you think that the panchayats will shoulder the responsibility for maintaining a school or having a road constructed, partly by grants from outside and partly from local taxation?—In course of time, I would like to have all these matters entirely managed by village panchayats.

15546. Do you think public opinion is favourable in the villages to constitute village panchayats and shoulder the responsibility for raising the necessary funds by means of local taxation?—In the past we were told "You had better raise your own money and spend it;" but we are not now returning to them the money raised in the villages, and that is the reason why it is unpopular. If you give them a portion of the taxes raised from them and ask them to spend it I am sure they will do it far more efficiently than we as a Taluk Board.

15547. Provided they are given the funds?—I do not call it giving them money; I call it returning the money which is raised in their village.

15548. So that you would return a portion of the money raised in the village?—When Government issued their Order in 1916 regarding the formation of the panchayats, they promised to give them a portion of the land cess raised in the village, but that was not given effect to. If that is given effect to you cannot for a moment say that you are making a contribution to the village, it is only returning the money which is raised in the village, which is their money and not the District Board's. If you view the question in that light and return the money to them I am sure they will spend it with greater efficiency.

15549. In respect of returning the money so far as the District Board is concerned, there was nothing to prevent your doing it; it was open to the District Board to have done that?—It requires Government sanction.

15550. Did you apply for any sanction?—I did apply for it in the case of Union Boards, but I did not continue in office for a sufficiently long time after that.

15551. There are two parties, the Union Boards and the panchayats; you can return the money in the case of the Union Boards but not in the case of the panchayats?—We can return the money to the panchayats with the sanction of Government.

15552. You know that schools are started by panchayats? On the promise of certain grants for meeting the expenditure on teachers?—Yes.

15553. Do you think in your district, having reference to your district conditions, the Government or the District Board is willing to pay a portion of the expenditure on schools, if the other portion can be found by the villagers?—That is taxing them again.

15554. They will not be prepared to do that?—I do not think so. I always believe it is a subtle way of introducing new taxation which is most unpopular, because the people are not satisfied that the taxes collected from them are spent for their advantage.

15555. One witness before us told us that the schools must be started by the panchayats and the whole of the expenditure must be borne by the villages; do you think that is possible?—I am dead against any new taxation from villages.

15556. Without any tax from the panchayats, have you got any definite proposals to offer?—I wish we could finance it without Government's help.

15557. You told us that in Vizagapatam district, education was made compulsory under the Compulsory Elementary Education Act?—No, it is not made compulsory.

15558. Can you tell us the reason why no step was taken in that direction? —I know the Vizagapatam Municipality said that without fresh taxation they could adjust their budget and have some money allotted and ask the Government to help; I do not know anything about the rural areas.

15559. *Sir Henry Lawrence:* I understand that you are in favour of the expenditure of larger sums of money on rural improvement?—Yes.

15560. You have stated that you would be able to find the funds in your own way?—Yes.

15561. Would you be prepared to let us know in what particular way you would find these funds?—By retrenchment in the services in the payment of salaries; that is my political view.

15562. Retrenchment in salaries from top to bottom?—Yes, certainly. I believe we can even effect a 25 per cent reduction.

15563. Do you believe the Government services are over-paid?—They are undoubtedly over-paid a good deal.

15564. Have you any idea of how much retrenchment you could make?—I believe the Madras Government spends about 12 crores odd in the shape of salaries to all departments.

15565. Do you think you might save 2 to 3 crores?—The increase in salaries was more than 3 crores within the last 6 years.

15566. That was owing to the increase in prices, was it not?—The increases were too much; that is my impression.

15567. All grades of the services have received too high increases?—There was an increase, but it was too much; that is my impression.

15568. In all grades?—Yes.

The Chairman: I think it may be well if I read out a list of the headings under which moneys have been advanced under the Agriculturists' Loans Act, No. 12 of 1884, which is the *Taccavi* Act: Purchase of seed grains, purchase of cattle, rebuilding of houses, sugarcane mills, purchase of fodder and other purposes.

R. B. C. V. S. Narasimharaju.

15569. Are you satisfied with the condition of the roads which are under the local authorities?—Yes; as far as funds permit they are good.

15570. Has there been any change in their condition in your recollection? Are they better or worse, or the same as they used to be?—They are the same as they used to be.

15571. They are no worse in your judgment?—No.

15572. In the discussion on the Mettur scheme, you mentioned that, in your view, the Secretary of State had acquiesced in that scheme under a misapprehension. I do not want to press you on the point at all, but the Commission is quite prepared to listen if you wish to say anything further on it? —In the despatch sent to the Secretary of State it was mentioned that high rates for irrigation can be raised, but the high rates can be raised only by legislation. At one time, it was thought that the high rates could be arranged under covenants running with the land by mere consent of the owners. The Legal Adviser of the Government said that mere consent on the part of the present owner cannot be taken as being a covenant running with the land, and that it required legislation.

15573. When was that advice given?—I cannot give you the date.

15574. After the Secretary of State had been so advised or before?—Before; before this despatch was sent. On account of such advice the special chapter in the Bill was drafted. After drafting the Bill the despatch was sent.

15575. *Sir Henry Lawrence:* What was the error?—They thought that the high rates in the Mettur project area could be levied, but in fact, without legislation they cannot be levied.

15576. I am not quite clear yet. On what point was the Secretary of State misled?—As to the amount of revenue to be realised.

15577. You think that amount cannot be realised?—No.

The Chairman: Without further legislation.

15578. *Sir Ganga Ram:* You anticipate opposition from the Legislative Council. Do you think the Bill will not be passed if it is introduced?—It was not opposed in the Council, but for reasons unknown to us Government consented to drop the Bill.

15579. In that respect the Secretary of State was misled?—Yes, because, to say that the Government have got the power to raise the amount when in fact they have not that power, I say, is misleading.

15580. *Sir Henry Lawrence:* Is that the same Bill as that to which you referred in regard to the Vizagapatam case?—It is a Bill that is required for the progress of the whole of the Presidency.

15581. Including the new projects for Vizagapatam?—For all.

15582. *The Chairman:* It would be a Bill of general application?—Yes.

15583. *Sir Ganga Ram:* I have some private information that this estimate is likely to be increased?—I shall not be surprised if that be the fact.

15584. What is your idea about the wages and other things?—I have not come across a single instance where the estimates are not increased.

15585. *Mr. Kamat:* Do I correctly understand you to say that you can scrape together 2 to 3 crores of rupees by retrenchment in the salaries of all grades of public servants, that is to say, from the school teacher up to the highest appointment?—Not only by reduction of salaries, but by reduction in the number of servants employed.

15586. By reduction of the posts?—Yes.

15587. Was there not a Retrenchment Committee appointed in your Presidency to investigate all sources of retrenchment?—Yes, but I do not think all its recommendations were given effect to by the Government; it was an advisory committee, and we know the fate of advisory committees.

15588. It was constituted of members of the Legislative Council, the people's representatives?—Yes; it had official members as well as non-official members on it.

(The witness withdrew.)

R. B. C. V. S. Narasimharaju.

Mr. A. G. LEACH, I.C.S., Collector of North Arcot, Madras.

Replies to the Questionnaire.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—The policy of Government is to obtain an exact registry of the owner of each bit of land. For this policy, there are two reasons, one being the desire to facilitate the collection of the land revenue, and the second to enable each ryot to know exactly what he has to pay and so to check dishonesty on the part of the village officers. It is also believed that the maintenance of a correct registry tends to keep disputes about the possession of land out of the Civil Court.

The process of sub-division is always going on either on account of the partition of a joint family property or because A buys a portion of B's land. In either case, the parties do not wish to remain as joint pattadars; each wants to hold his own share separately and to be registered as the sole owner of it.

In registering minute sub-divisions, therefore, Government is undoubtedly following the wishes of the people. Nor would the mere administrative refusal to recognise sub-divisions do anything to mitigate the agricultural wastefulness of them. The parties would not co-operate by cultivating the whole field together and sharing the proceeds; each would cultivate his own plot and there would be constant disputes about the boundaries of the plots. At the same time, the amount of land revenue that each had to pay being uncertain, the village officers would take advantage of this to exact too much from each.

Another consideration which tends to the scattering of holdings is that a ryot likes to hold plots which give him a variety of crops that makes him self-sufficing; one area may be particularly suitable for *ragi*, another for ground-nut, a third for chillies, and many ryots aim at being able to supply as many as possible of their own needs from their own land without having to buy what they want elsewhere.

Side by side, however, with these disintegrating tendencies there subsists a certain desire for consolidation which might be turned to useful purposes. A ryot likes adding field to field and a man who owns widely scattered plots often leaves some waste because of the trouble of looking after them all at once.

A good deal might be done in the way of effecting exchanges of land with a view to make holdings more compact and fields larger if the initiative were taken by Government. It would be expensive but the experiment might be tried on a small scale, say in a single taluk. A special staff would be required and its operations would at first be slow but would be accelerated when once the suspicions of the people were dispelled, and they acquired confidence in the officers conducting the operations. An instance of what can be done in this way is, I believe, afforded by the settlement of intricate rights in palmyra trees which was made at the re-settlement of the Tinnevelly district, where the settlement was made without legislative sanction purely by persuading the people of the merits of the settlement.

I am not acquainted with the legislation in other countries upon this topic and its results, and how far it might be suitable to conditions here. I think however, that a trial of purely administrative means should precede legislation. The effects of such means might not be enduring, and the special cases mentioned in sub-head (*e*) of the question would limit the scope of the operations, but the operations would have a useful educative effect and pave the way for the smooth working of legislative measures, if the experience gained showed that legislation was desirable.

QUESTION 8.—IRRIGATION.— (*a*) I have no particular suggestion to make under this head, but it might be mentioned that the consideration of new irrigation schemes and the maintenance and improvement of old works is a constant part of the work of a district officer. Suggestions sometimes sound,

sometimes absurd are frequently made by the ryots for the construction of new tanks, and channels, etc. The obstacles to their being carried out are either their excessive cost or the opposition of other ryots on the ground that the scheme would interfere with existing rights, or the unwillingness of dissentients to agree to pay a higher rate of assessment in consequence of the improvement. When a scheme gives a reasonable prospect of proving useful at a reasonable cost and when no one can complain that his rights are being interfered with and in cases where this is necessary when all the ryots agree to pay the higher rate the scheme is put through. The defects in the Irrigation Law of this Province remain unremedied because successive attempts at legislation have so far failed. If the legislature would pass measures for the compulsion of minorities and the exclusion of irrigation matters from Civil Courts, a considerable obstacle would be removed.

To the extension of irrigation by wells, there is no limit except the ability of the ryot to obtain the money to sink them. A poor man has not this ability. Government does not at present construct irrigation wells; its efforts in that direction are limited to lending money for their construction. I do not think, however, that the obstacles to the sinking of irrigation wells by direct Government agency are insuperable, and it would be particularly suitable in those areas where the ryots are too poor to be able to furnish security for a State loan or to obtain sufficient credit elsewhere. It would be useful particularly in the foundation of small colonies of depressed classes or others on areas of a few hundred acres (*e.g.*, where a block of forest land is thrown open to cultivation). The business might be done on the hire purchase system: a well once sunk cannot of course be taken away, but Government would hold the first mortgage on all land which the well commanded. It is desirable that the State should not retain possession of such wells permanently, as it does of tanks and channels, for the direct control of a large number of scattered wells would be an excessive burden. There are difficulties, but it would be possible to work out a fixed annual rate to be paid by the commanded lands until the well became the property by purchase of the landowners.

QUESTION 16.—ANIMAL HUSBANDRY.—Every village is overstocked with herds of wretched starveling cattle, which are kept alive by the scanty grazing that the common pastures afford. Their only use is to supply manure in limited quantities while they are alive and leather when they are dead. Much of the manure is wasted by being dropped about the pastures (communal grazing grounds or forests), much by being used as fuel, and much by being dropped about the roads and paths in and round the village to the detriment of the health of the inhabitants. The cows are so poorly nourished that they supply very little milk, and the bulls are too weak to work in the fields or pull a loaded cart. Mingling in the village grazing ground fosters the promiscuous propagation of a degenerate stock.

One thing that is required is to reduce the number of these useless animals.

The better class of animals are kept apart from the village herd and are tended with some care by their owners.

The village grazing grounds are open to all without fee: it is nobody's business to look after them or to do anything to improve them. The present policy is gradually to abolish them, and to assign the land to individuals for cultivation. The alternative is to entrust the management of them to the village panchayat in the hope that that body will do something to regulate to use of them *e.g.*, by separating the sexes, closing portions from time to time to enable the grass to grow, planting trees for shade, charging a fee for admission, or refusing admission to an excessive number. There is much that might be done in this way, but very little that has been done or is likely to be done. On the whole, therefore, I think the best way is to proceed with the gradual abolition of the grazing grounds. It may be objected that this increases the pressure on the forests, but as a fee has to be paid for grazing in the forests (and this includes forests managed by a panchayat, not under the Forest Department) a man thinks twice before

he pays the fee for a useless animal. The removal of all common grazing grounds might tend to induce the ryots to set apart a bit of their own land for pasture: in some districts where the breed of cattle is better than usual fields are sometimes grown with grass for the cattle. In many districts there are areas of land which are available for cultivation but are not taken up by anybody, because they are too barren to yield a crop except in years of exceptional rainfall, and rather than pay a few annas each year to retain them in his possession permanently a ryot establishes a sort of claim to cultivate them in the occasional good years, but does nothing to improve them. If there were no communal lands available for the cattle, ryots might be driven to take such lands up and reserve them for their own cattle and try to improve them.

The touring Veterinary Assistants used to do a good deal of castration work in villages. This was all to the good but I believe touring has now been abolished.

The more general adoption of castration and the restriction of common grazing grounds (by making the keeping of profitless cattle a burden) would help to reduce the number of useless animals, and might assist towards the better feeding of the useful ones.

Question 19.—Forests.—I have not met with any serious degree of erosion of agricultural lands owing to the denudation of hills. The effect of such denudation is shown rather in the silting up of the beds of irrigation tanks: the water coming down in a rush immediately after rain brings with it a large volume of sand which it finally deposits on the tank bed If the hill sides were more thickly covered with tree growth and vegetation in such places, the precipitation of the water would be less rapid and the soil would be firmer and less liable to be washed away.

The remedy is to reafforest the hillside but the cost of this is so large as to make it prohibitive. On some barren hillsides where everything that could be cut for fuel has been hacked away, regeneration is extremely slow (I have seen a reserved forest on a hillside where after 20 years' supposed strict exclusion of grazing, there was practically nothing growing) and planting is extremely costly owing to the difficulty of tending and watering.

Here and there the panchayats to which the control of inferior scrub jungles, hitherto reserved under the Forest Department, has been handed over, have planted trees on the slopes, but nothing on a large scale has been undertaken. The pressure of demands for grazing will probably prevent any very marked success by these means, and the number of such panchayats which at present devotes any serious attention to improvements is small.

Apart from the question of erosion, the need for increasing the supply of fire-wood in many rural areas is undoubtedly pressing. Here and there a well-to-do ryot, who can afford to wait for a return on his expenditure, plants a casuarina tope, but otherwise nothing is done, and the panchayats which plant trees plant fruit trees with a view to an early profit rather than fuel providing trees. Further progress might be made by giving grants to those Forest Panchayats and village panchayats, which have shown energy and initiative, for the purpose of planting casuarina and other fuel trees.

Question 23.—General Education.—I do not think that the teaching of agriculture in the schools is a practical method of improving agricultural practice. An improvement in general education would make the agriculturist more receptive of new ideas and more willing to put them in practice, and for the wide-spread dissemination of ideas, it is essential that there should be a wide-spread ability to acquire knowledge by reading. It would suffice for the needs of the mass of the agricultural population to learn the three R's. and to acquire some general knowledge of the world through geography and history in order to enable them to read books after leaving school, but the prospect of attaining even this is distant. There is no time nor need for the study of agriculture as a part of the ordinary

course of education, and no boy would learn enough in his school career to be of any practical use to him afterwards. Nature study may be of use in interesting some boys in the subject and in educating the faculty of observation, but I should hazard the guess that it is usually badly taught, makes very little impression upon the pupil, and is not connected with anything out of school hours.

For the ordinary small landowner, agriculture, like eating, is a practical business learnt in a practical way. The food expert lays down what we ought to eat and when we ought to eat it, and how we ought to cook it, and if we are able to read and understand his opinions, we may make practical experiments ourselves accordingly, though we have learnt nothing of food values or scientific cookery at school. Similarly, if a practical agriculturist is able to read and understand what the scientist in agriculture says, upon what to grow and when and how to grow it, he may be moved to test these views on his own land, especially if he has experienced some particular failure for which the scientist suggests a remedy. In this connection what is of value to the agriculturist is not any smattering of agriculture that he may have acquired at school, but the power to understand and appreciate the teaching of the expert which he has acquired from his general education.

This is not, of course, an argument against a special course of training in agriculture, but only against the idea that there is any use in attempting to include agriculture as a subject of study in the ordinary school curriculum.

The improvement of agriculture in India depends, I suppose, in the end upon research and experiment and upon the possibility of communicating to the agriculturist the result of such research and experiment and persuading him to adopt the methods advocated by the scientist. That means that research and experiment must be endowed, and that the agriculturist must be educated enough to be accessible to approach through the written word. It does not mean that one should aim at conciliating the agriculturist towards education by attempting to impart agricultural knowledge to his son at school. The *special* education of the few (research workers and others) and the *general* education of the many is what is indicated as necessary to progress. The agriculturist at present is inclined to deny the utility of all education, unless in so far as it enables some people to earn higher wages than others in pursuits unconnected with agriculture. It would be idle to attempt to convert him by professing to teach agriculture, about which he is convinced nothing can be learnt except in the fields.

Question 24.—Attracting Capital.—There is no lack of capital for acquiring agricultural land. Numbers of persons who have made money in trade or law or elsewhere invest capital in the purchase of land; but it is usually regarded as a safe investment rather than a paying one, and the purchase is usually not followed up by further investment in development. The land is let to a cultivator and the owner contents himself with receiving a proportion of the produce as rent, but otherwise takes little or no interest in the land. He is concerned rather with the safety of his capital than the earning of interest on it. For an income the relies on capital devoted to moneylending.

I do not know that any special inducement can be held out to wealthy people to take an interest in the improvement of the land, or that there are any special factors, other than personal, which discourage landowners in general from carrying out improvements. Those who belong to the agricultural class do take an interest in land and (within narrow limits) if they have the means to the improvement of it; those who are not of the agricultural class, with some exceptions, take no interest in it. The former are not progressive in their ideas, the latter are not prepared to devote time and trouble and money to agricultural matters. In general it may be said that the lack of knowledge and initiative prevents the wealthier landowners and the lack of knowledge, initiative and money the poorer,

from effecting improvements. It is possible that in some zamindaris (as opposed to ryotwari land) the fact that the rent varies with the crop, and that the superior crops such as paddy, sugarcane, or betel are subject to a high rent to some extent weighs against improvement; but I cannot name actual recent instances of this.

Mr. A. G. Leach.

Oral Evidence.

15589. *The Chairman:* Mr. Leach, you are Collector of North Arcot?—Yes.

15590. The note submitted by you is before us. Have you any general remarks which you want to make at this stage?—I do not think I have any.

15591. Under the heading 'Fragmentation' you say that the policy of the Government is to obtain an exact registry of the owner of each bit of land. That is under the ordinary process of the land revenue?—Yes.

15592. Do you happen to know whether there is available any statement showing the number of holdings below 5 acres, the number of holdings between 5 and 10, the number between 10 and 15 and so on. Can you get it from the districts?—Yes. I think there are statements for each district. There are certain resettlement lists of *pattadars* prepared showing *pattas* of certain values. I cannot say if they are prepared annually, but I think they are on record in each district.*

15593. You describe the circumstances which make for the disintegration of holdings. But while there are such tendencies, there are others which are making for re-consolidation, so to speak. If there were not, fragmentation would have proceeded infinitely further than it has in fact proceeded; would it not?—Yes. The natural tendency of a man is to extend his land if he can by buying adjacent plots and so on. I suggested in reply to question 7 on page 588 that an experiment might be made. But I have since read Mr. Macmichael's evidence where he said that the experiment has been tried and dropped some years ago, which I was not aware of. It seems the experiment that I have suggested was made in Trichinopoly. I do not quite know why it failed, but I think it was because the ryots did not take much interest in it.

15594. Have you studied the experiments in co-operative consolidation that have been pressed with so much success in certain districts of the Punjab?—No, I have not seen anything of that. As far as I know it has not been done in this Presidency.

15595. Do you think there is any hope that cultivators could be persuaded for a limited number of years to make the experiment of consolidation on the understanding that they could return to partition and fragmentation if they were not satisfied with the results and that certain of the more easily persuaded communities might take the plunge?—I think it is possible within very narrow limits. The difficulty is that the evil of small holdings is particularly marked in the case of wet lands, that is to say, irrigated lands. In many villages there are six, seven or eight irrigation sources; the difficulty would be to induce a man who had land under one source to exchange his land for land irrigated from another source, which he might consider inferior. I should think some cash would have to pass with the transaction, and that would undoubtedly increase the difficulty of making a settlement.

15596. In your experience is fragmentation increasing in this Presidency?—Undoubtedly I should say.

15597. But is that founded on the conviction that it must be increasing or on your experience of a particular district?—No, on my experience of the number of sub-divisions that are being made.

15598. I should like to ask you a question on your answer to question 8, on Irrigation. Do you think that more might be done to assist the ryot in sinking wells?—I suggested that in some cases where 400 or 500 acres of land are thrown open for cultivation, there may be no opportunity of irrigating it by direct flow, and the only means of irrigating it is to sink a well. Where the land is not already privately owned, I think it would be possible for the State to sink wells and to retain the wells as their property until such time as the ryots had paid by instalments and

*See Appendix I to Mr. Macmichael's evidence on page 304.

had bought out the Government ownership. Unfortunately, in such cases these lands are usually given to the poor classes and the question is whether they would be able to cultivate the lands sufficiently carefully to get a sufficient return to enable them to pay the fairly high rate which they would be required to pay.

15599. They have not the skill in cultivation to get the advantage out of the water, is that it?—Possibly not.

15600. In view of your wide experience in the matter of animal husbandry and on the particular question of the quality of the draft oxen in the Presidency, I should like to ask you whether you think that there is any real appreciation on the part of the ryot of what a better draft animal would mean to him? Does he wish to improve his draft animal?—I think certainly not. I do not think he shows any sign of trying to realise his ambition in any case. He may have seen better cattle, but he does nothing to improve his own.

15601. Do you think the quality of the cattle in the Presidency is stationary or is declining or is improving?—I could not say at all.

15602. You have not formed any impression?—No.

15603. Have you any experience of Forest Panchayats, so far as grazing is concerned?—Yes, I have seen something of them; I have a certain number in my district.

15604. How do you think the forests are being managed by the Panchayats?—They are very much in their infancy; they have only been running for a year or two now and it is too early to judge. In some cases they are doing fairly useful work and I should say on the whole the bulk of them are not doing any harm and some of them are doing good. There are some which plant trees, and construct ponds for the cattle to drink out of; some of them are fairly strict in levying fees, prosecuting people who fail to pay the fees, and so on. I think one can only say that they have made a fairly good start, but it is impossible to say what the ultimate result will be.

15605. In the matter of General Education, I observe that you are firm for the principle of literacy as the first objective of education. You say: "I do not think that the teaching of agriculture in the schools is a practical method of improving agricultural practice. An improvement in general education would make the agriculturist more receptive of new ideas", etc.—Yes.

15606. Have you studied the educational system personally?—No; I know very little about it; I am afraid this is purely a general note, not founded on any particular knowledge.

15607. I wondered whether you would care to express any view as to the efficiency of the average teacher?—As a teacher of agriculture I should imagine he is hopeless.

15608. I am speaking of general education?—I do not think I could give a general opinion. The general village elementary school teacher I should think is rather an inferior product; but I have nothing to say about the teacher of higher education.

15609. Have you any personal experience of co-operative societies in the Presidency?—No, practically none.

15610. You have not seen them at work?—No, I have no special knowledge.

15611. Has most of your experience been in irrigated tracts or in dry tracts?—Both inter-mingled. I have seen a good deal of irrigation questions from time to time.

15612. Have you formed any view as to the efficiency or the reverse with which the Agricultural Department first by its research activities and secondly by its Demonstrators serves the agriculturist in the Presidency?—I should think they do not reach to any large extent the ordinary run of cultivator.

15613. You do not think they are quite getting down to the cultivators enough?—I should think probably not. In my district certainly not. It so happens that there is one small demonstration farm, but I doubt if ryots even a few miles off know of its existence. I think there is only one Demonstrator in the district.

15614. Do you know him by sight?—I know him by sight.

15615. *Sir James MacKenna:* With reference to the sinking of wells, you put forward an alternative scheme of finance. You say: "To the extension of irrigation by wells, there is no limit except the ability of the ryot to obtain the money to sink them. A poor man has not this ability. Government does not at present construct irrigation wells."—That is the present position. I suggest the Government themselves should do the work.

15616. Do the whole thing?—Yes.

15617. People of course do not put much value on things for which they do not have to pay, do they? Would you not prefer a system of grants up to half the cost of construction, the other half being lent by Government?—I was thinking rather of cases where people owning land which could be irrigated by the well are not able to put down anything.

15618. In that case, you would be in favour of a scheme by which Government should do the whole thing?—Yes; and another thing would be that they would have difficulty in doing the work themselves because they would not possess the skill.

15619. Yes, I understand you; you are dealing with the marginal limit of cultivation; I see you note with regret that the touring veterinary assistants have been abolished. Which do you think is a better system of working in a district or Province; the stationary dispensary or the touring veterinary assistant, or a combination of both?—I should think a combination of both would be best. The stationary dispensary is certainly necessary, because it is then generally known where you have to go to; but I also think that in order to popularise the work, touring assistants are equally necessary.

15620. To deal with outbreaks?—I am not quite sure, but I understand the present system is that there is a touring assistant in each taluk, who goes out when there is an outbreak and deals with it. Otherwise, as far as I know, he assists the station.

15621. You prefer the touring assistant always touring, with definite work amongst the villagers, combined with the dispensary?—Yes.

15622. One man stationary and the other moving about and instructing the people?—Yes.

15623. How many years' service have you?—17 years.

15624. Have you been in districts as Collector?—Yes, I have been Collector for about 3 years.

15625. Have you in the course of your service seen any indication of a growth of public opinion in the direction of the improvement of rural conditions and uplift generally? Do you think public interest in the matter is more alive than it was when you joined the service or are things much as they were?—I should think that in the rural area it is pretty much the same except where there are educated men in the villages, particularly those who know English; some of them are making an attempt to run a village panchayat.

15626. *The Chairman:* Where does the English come in there?—I mean through their knowledge of English they get into touch with modern ideas of improvement. I did not mean that because they know English they become sanitary, but only that knowledge of English means that they have been educated. They have ideas about modern methods of improvement.

15627. *Sir James MacKenna:* So that on the whole there is perhaps a slight manifestation of improvement?—Yes, a slight manifestation of a desire for improvement but not backed by very much action.

15628. Village opinion, being conservative, is very much against improvement?—I have been to a village which has a village panchayat at which its President announced that it was doing useful work; but I found in the village heaps of cowdung strewn at every place; prickly pear growing over all the paths, and so on. That desire is not always translated into action; their desire for action is not always effective.

15629. Still some good may come from a few seeds sown; perhaps by the time you retire you may see an improvement?—Probably.

15630. *Professor Gangulee:* How long did you say you have been in this district?—18 months.

15631. Were you in this Presidency before you came to this district?—I was working in this Presidency, but not in the North Arcot district; I have been 18 months in the North Arcot district.

15632. You have just said that you knew the Agricultural Demonstrator by sight and you have also explained what little effort is being made for rural uplift by non-official agencies. Have you at any time felt the necessity of inviting any Agricultural Demonstrator to your district for demonstration purposes?—No; I have not.

15633. Are you in touch with the Director of Agriculture?—Not specially; I supply him with statistics occasionally and that sort of thing.

15634. What sort of statistics?—Statistics about crops, crop areas and that sort of thing.

15635. Your district is I think a ryotwari district?—Practically entirely.

15636. No zamindari?—There are two zamindaris.

15637. Can you give us an idea of the condition of the ryots in the zamindari tract as distinct from that in the ryotwari tract? Do you find any difference in the conditions?—One of the zamindaris is now being managed by the Court of Wards and I do not know very much about the internal condition of the other. I should not think there is any very marked difference.

15638. From your general impression you think that the conditions are practically the same?—I really do not know; as regards the other zamindari, it so happens that I have not toured in it extensively and I am not really well acquainted with it. It happens to be a particularly poor tract.

15639. In the short time that you have been in this district you have come in contact with the panchayats, have you not?—Yes.

15640. What are the prospects of these panchayats? Do you think there is any prospect of their becoming a genuine organised part of our village life?—I think they might become so in course of time.

15641. You see that tendency in these panchayats?—A start is being made. The village panchayat is very much in its infancy; but some of them are beginning to levy taxation though sometimes they drop it soon after owing to the objection of the villagers to paying. Anyhow, some sort of effort is being made here and there.

15642. You think it is a good beginning?—I should think so on the whole.

15643. In what way can Government assist this movement, this beginning?—I do not think Government should do very much; I think they should be left on the whole to work out their own salvation.

15644. Can these panchayats expect some sort of help and impetus from the Collector of the district?—I really do not know; I suppose if they came to me for advice I might give it. I do not know what other impetus I could give them.

15645. If you realised that they had made a good beginning perhaps you would go to them with your suggestions so that they might not blunders and make mistakes?—I think they are bound to blunder and derive experience from their blunders.

Mr. A. G. Leach.

15646. *Mr. Calvert:* Have you ever examined village papers specifically with a view to discover the extent of fragmentation?—No.

15647. You really cannot say whether fragmentation is a serious evil or not in this district?—I should say it is in view of the fact that holdings are very small in many places.

15648. I mean the fragmentation of the holding into different plots up and down the village area?—I see, I should think it is fairly considerable; but I could not give you any information; I have not actually made any enquiries of that kind.

15649. According to the Statistical Atlas the average holding per *pattah* in your district is 2·98 or a little less than 3 acres, of which 2·26 is dry and the rest is wet?—Yes.

15650. That is itself a very tiny holding, and it is practically all dry, so that any fragmentation of that holding would be a very serious matter? —Yes.

15651. You have not really tried to get figures for any particular village? —No.

15652. I do not quite understand why you say that this consolidation would not have an enduring effect?—I meant that after this consolidation had been made a man might again sell bits of his holding, buy other bits, and so on.

15653. Do you not think that the fact that a man owns a tiny plot a considerable distance from his main plot is itself an incentive to sell that tiny plot?—It is undoubtedly.

15654. If he had a consolidated holding that inclination to sell would be less, would it not?—Yes.

15655. You suggest that an experiment might be expensive. In the Punjab it works out at Rs. 1-6-0 per acre. Would you call that expensive? You would not mind spending that amount on an experiment, would you?—It means Rs. 2,000 to 3,000 a village.

15656. That is not very great?—No.

15657. As to sinking wells, your idea is that the Government should levy a cess on the acreage irrigated until the principal sum with interest had been repaid?—Yes.

15658. What is the objection to that?—The objection is that to get the debt liquidated within a reasonable term of years the rent would have to be rather high.

15659. It would be no higher than the *pattadar* now has to pay when he borrows under the Land Improvements Act?—No; I should think so.

In the Punjab there is a special local objection to that, but I do not understand the objection in Madras; you cannot give any special objection to the Government sinking a well and taking back the principal and interest in instalments over a long series of years?

15660. *Dewan Bahadur Raghavayya:* May it be the excessive cost of construction when undertaken by the Government?—Government would pay no doubt higher than a private owner would pay.

15661. That probably is the objection?—That would no doubt be an objection.

15662. *Mr. Calvert:* On this question of capital, am I correct in assuming from your note that while numbers of people are willing to invest money in the purchase of land, the investing of money in the improvement of land is less frequent?—Yes.

15663. Do these people who have made money in trade or law and have bought land, show any inclination to invest money in land improvement?—On the whole not. I have known of cases of people, retired officials and so on, how did take up land and cultivate it themselves, looking after it themselves; but on the whole I think it is regarded as a way of putting money away and letting it sleep.

Mr. A. G. Leach.

15664. Do you think the fact that the land is rising in value has itself stimulated the purchase of land? Do they purchase land because land is rising in value?—I should say not particularly. It is due to lack of other means of investing money which they consider safe.

15665. They would hardly invest money in land if it were year by year declining in value would they?—No.

15666. Taking these figures for your district, the average holding of 2·9 acres, that means that you must have a large number of your 374,000 *pattadars* well below the average. Can you in your most optimistic vein foresee any escape from poverty for those people by reason of agricultural improvement alone?—No, not for the average man.

15667. I mean for these people with holdings of under 3 acres?—I do not know what proportion there are, but the small holder, a man who holds as small as that, cannot escape from poverty.

15668. Can you yourself suggest any ideas whereby the poverty of these people could be relieved?—I should think it is impossible for them without capital unless they can sink a well or something of that sort.

15669. I am not very well acquainted with Madras conditions, but from the evidence put before us it seems that the only possible source of potential wealth is their spare labour. Apparently there is ample spare labour. Do you think they could be educated up to the point of employing their spare labour for the improvement of their local conditions?—In what way?

15670. Instead of taxing them so much per head for village improvement, could they be induced to give their labour for village improvement, say for putting up proper houses, proper streets, wells, drains, etc.?—It would be a matter of getting the wealthy villagers to pay the poorer ones to clear up the village generally.

15671. You do not think there is much chance of co-operative organisations being brought about to help to give so many hours labour a week for village improvement?—I suppose that is a sort of thing that some panchayats might aim at, but I have not actually heard of it being done in that way. To some extent the repair of roads and upkeep of channels is done by those methods. It is up to the whole village to contribute labour, and those who do not labour themselves send coolies.

15672. *Mr. Kamat:* With regard to fragmentation of holdings, would you favour a proposal to give, by way of inducement to cultivators, an exemption from land revenue, say for three years, if they consolidate their fragments into larger holdings?—I do not think I should.

15673. Would you be surprised if some other local Governments were prepared to go so far as that in order to popularise legislation in this respect?—I do not know that I should be surprised or otherwise.

15674. *Rao Bahadur Muniswami Nayudu:* On page 589 of your note you refer to sinking wells at the cost of Government when lands from disforested areas are given to depressed classes. Have you got such lands available in your district?—Yes.

15675. Did you try that experiment at any one place?—No, I am proposing to try it. As a matter of fact in some of the areas I have induced missionaries and other people to take up a settlement and provide the capital. There are still other areas where I propose to try this system if Government will accept it.

15676. Are the lands given conditionally, *i.e.*, without any right of alienation, or are they given with full rights of alienation?—The lands given to the depressed classes are subject to the condition that they shall not be alienated.

15677. And to the missionaries?—To missionaries they are alienated on a similar condition; they have to sign an agreement that the land will not be used for any purpose other than that for which it is given.

15678. You hold *jamabandis* as Collector.—Yes.

15679. You get a lot of ryots coming to you to state their grievances?—Yes.

15680. What generally is the nature of the grievances which you hear from them?—They vary; repair of roads, repair of tanks, remission of charges for irrigation, requests for sub-division.

15681. Let me take the first, repairs of roads. Is there a general desire on the part of the villagers to have their means of communication repaired and put into order?—Yes.

15682. In answer to a question from Professor Gangulee as to what kind of help Government might give to panchayats to make them more effective and to induce them to take more interest, you said you would not advocate any Government help. Do you say from your knowledge of these panchayats that they are in a position to find the necessary funds to lay a new road or repair an existing road?—For repairing an existing road, I should think it is a matter of removing the prickly pear or putting down a few cart-loads of earth. For metalled roads it will be a different matter.

15683. Putting a new road in a place where there is an irrigation channel and so on?—I think the panchayats could not do it; in that case, it would be the business of the Taluk Board to assist them.

15684. Therefore, you would advocate some subsidy being given to them?—I say it is a matter for the Taluk Board to provide the funds and the engineering skill.

15685. Are you a member of any local boards?—No.

15686. Do you know whether the Taluk Boards have the funds necessary to open new roads or do you think that their funds are only just sufficient to maintain the roads already in existence?—The Taluk Boards, I should think, are mostly bankrupt, but they could presumably get money from the District Boards.

15687. Or from the Government?—Well, the Government deals with the District Board.

15688. In the section on Animal Husbandry, you refer to the policy of Government to gradually abolish the common grazing grounds. Has that system gone on to a large extent in your district?—Not to a particularly large extent. It is a matter of nibbling at the edges; it is not being done on any systematic basis or on any particularly large scale.

15689. You give two alternatives, either to abolish common grazing grounds or to assign lands for cultivation. Which of the two do you prefer?—I want to abolish them and to assign the land to individuals for cultivation.

15690. I am wrong. The alternative you suggest is to entrust the management of them to the village panchayats. Which of the two you prefer?—That will depend on the circumstances of each particular case; I should not like to make a general rule.

15691. In cases of applications for assignment of these lands, do you try to find out whether the villagers themselves would take the land and form a panchayat to control the grazing?—I do not think in most cases it would be worth while to form a panchayat for that special purpose; but in cases where there is a panchayat already, I think they would generally be consulted.

15692. Supposing the villagers apply to you for the exclusive privilege of grazing, stating that they will form a panchayat to control the grazing land for the benefit of the population, would you give them the privilege they ask?—Possibly, it would depend upon what the previous history of the land has been. In many cases the land is registered in our accounts as grazing ground, when in fact it has been under cultivation for a number of years without any particular objection by the villagers in general. In such cases I should leave it as cultivated land.

15693. In question 23—General Education—you make a suggestion that the agriculturist must be given education which will enable him to read and understand what the scientist in agriculture has to say. Are you in touch with the Agricultural Department?—I am not in particularly close touch with them.

15694. Are you aware of any literature of the nature you refer to, which the Agricultural Department has published?—They publish any amount of literature, and a large number of bulletins.

15695. Are those bulletins distributed in sufficiently large numbers?—I do not know. I do not know what the method of distribution is. I think the better method is one that was pursued in the Circars. You probably know in the Telugu country there was one Deputy Director who introduced agricultural maxims in the form of popular songs; he set them to the local village tunes and taught to the village choirs.

15696. *Sir Henry Lawrence:* In your paragraph on Irrigation on page 589 you speak of some difficulties: "The defects in the Irrigation law of this Province remain unremedied because successive attempts at legislation have so far failed." Can you give us any idea of what are the principal defects you refer to?—What I was thinking of was that now if a new scheme is suggested which affects existing rights in some way or necessitates special rates being charged it is a difficult matter to get an agreement all round with the landholders whom the project affects. We have no provision as they have in other provinces for bringing in an individual objector when the majority agree.

15697. But you have carried out a very large number of big projects in this Presidency?—Yes.

15698. How were they carried out without the existence of this law?—I do not know whether the work was put down and it was hoped that the ryot would take the water; but it has occurred in some cases that where a tank has been sunk more or less as a venture by Government, for some years it has been a dead loss, because the ryots did not take the water, and they were not liable to pay unless they took the water.

15699. So that the object of the new Act is to increase the powers of Government to recover charges for irrigation provided whether the ryot wishes to take the water or not; is that the point?—That was what I meant here.

15700. A bill has been drafted, but has not yet been finally passed; is that it?—Yes.

15701. If that bill were passed, would that remove these defects?—I think so; I am not quite sure what its form is likely to be or would be, but the general idea is that it would give Government greater power in handling irrigation schemes in general.

15702. We have just been told by some witnesses of some very high prices of land which appears to return to the owner a very small percentage of the price paid for it. What is the reason that these very high prices exist?—The high prices of the land?

15703. You have heard of land which is valued at Rs. 2,000 an acre?—Yes.

15704. And on that land the owner estimates he gets Rs. 50 to Rs. 60 rental?—Yes.

15705. Rs. 50 to Rs. 60 is not a very high return on Rs. 2,000 capital; can you explain the reason for this very high cost of land?—I should think that if he paid Rs. 2,000 for the land he would get more than Rs. 50 in the shape of produce from it.

15706. Do you think that the return is under-estimated?—Yes, I should say so undoubtedly.

15707. Have you any idea as to what is the actual return from such land?—No, I could not give the figure.

15708. Which districts are you chiefly acquainted with?—North Arcot, but I am not particularly acquainted with the prices of land in North Arcot. Any Settlement Report would give figures about the price of land and the value of the outturn over a series of years.

15709. In your opinion, are the conditions of the labourer class satisfactory?—They are certainly not satisfactory; and if the labourer belongs to the depressed classes, the *pariah* class, they are very bad indeed.

15710. Has he any other alternative employment to agricultural labour? —He can get cooly work of all kinds, work on the roads, work on the railways and that sort of thing.

15711. Is there a sufficiency of that employment available?—Not always; I should say that during the cultivation season he can always get work on the land; at other times a certain number of them get work on railways, public works and so on.

15712. *The Chairman:* Or by emigration?—Or by emigration; from North Arcot a very large number go to the Straits Settlements.

15713. *Sir Henry Lawrence:* Is he tied to the land in any way or can he get away?—He is sometimes tied, but he does go, I think. He is sometimes in hopeless debt to his employer, and that debt is passed on from father to son; he is more or less a slave, but he can escape.

15714. He can go if other employment is available?—Yes.

15715. He travels as far as Burma and the Straits Settlements and Ceylon?—Yes, the Straits Settlements and Ceylon particularly, and occasionally to Assam.

15716. Is it easy for him to get to those places?—Quite.

15717. There are no restrictions or difficulties?—There are restrictions, but I do not think they affect him very seriously. It has been going on for so long in this district that they know the conditions and they are more or less accustomed to them.

15718. When he goes abroad, does he return with any cash in hand?—Yes.

15719. Or improvement in his status?—Usually he returns with cash in hand, if he returns, and he is possibly able to buy land or build a better house with his earnings.

15720. Have you seen that process actually taking place?—No; as a matter of fact, I was thinking of the returned soldier; I have not come across any special case of the returned emigrant buying land with his savings but he does return with some savings anyhow.

15721. Does he return a better or a worse citizen?—I really do not know.

15722. Is he more or less addicted to drink?—I really do not know, I could not say.

15723. We have been told that they come back and spread the habit of drink among their innocent neighbours. Is that so?—I do not think his neighbours are so innocent as all that.

15724. Then you consider that this outlet of emigration is an important factor in the economic condition of the depressed classes?—Yes.

15725. The last witness told us that it was advisable to spend a great deal of money on agricultural welfare and improvement, that he could find the money by reduction of salaries and also by reduction of the numbers of men employed. Do you think that that is a possible means by which to finance agricultural improvement?—I am one of the prospective victims, but I should say that there was no saving to be made in that way.

15726. What about the general range of public officers? Have their salaries been increased?—Yes, in all grades they have been increased throughout.

15727. In a similar proportion in the lower grades and in the higher grades?—I do not know; I do not know how the thing runs at all.

15728. You have no idea of the percentage of increases in the lower, middle and top grades?—I do not know how they compare at all. I should say that the increase of pay that my peon has got is commensurate with the increase of pay that I have got, but I do not know what the percentage is.

15729. Can you just illustrate that? What is your peon's pay now, and what was it before?—It was 9 rupees. It is now Rs. 13 or Rs. 14.

15730. *Sir Ganga Ram:* How are these panchayats constituted, by nomination or election?—By election.

15731. By election?—Yes.

15732. Is there no difficulty in the way of any depressed class man or untouchable coming in?—I do not think he does come in.

15733. Supposing he were educated and stood for election?—It would be a matter of his being able to get enough people to support him.

15734. If he did get in, would there be any communal trouble or anything of that kind?—I should think probably there would; he would not be allowed to sit along with the others.

15735. He will not be allowed to sit with the other members?—I think, probably, he will not be allowed to sit with them.

15736. *Sir Thomas Middleton:* In the best rice growing districts which you know what do you consider is the smallest area of land which a cultivator should have, to keep him out of debt?—I really do not know.

15737. Would it be 2, 4, or 6 acres?—So much would depend on his family.

15738. Let me put it in this way: In the districts with which you are acquainted, what is the ordinary size of holding of the best rice land?—I do not know at all.

15739. I was going to ask whether in the rice-growing tracts of this Province, it is sub-division which is the problem or fragmentation. Is it the small size of the holding or the scattered character of the holding that is the chief economic trouble?—It is hard to distinguish; I should think both operate a great deal.

15740. In some parts of India we have evidence that there is great economic waste arising from the fragmentation of the holding, on account of the waste of time in going from place to place, but judging by the rice cultivation in Madras which I have seen, it seems to me that the difficulty arises not from the scattering of the pieces of land, but from the small area available to each cultivator?—They are small fields.

15741. You have indicated that in certain rice-growing areas in certain tracts, there may be advantages in fragmentation, in allowing the cultivator to grow crops for his own subsistence such as chillies and so on?—Yes, but chillies would not be grown on irrigated land.

15742. I thought your point was that there might be a part of the village land on which it might be possible for the paddy grower to grow chillies, and he might want a small section of that land for his own use?—Yes. I think he would always want a well; that would be rather high and dry land with a well on it.

15743. I am taking the point you make in your note on fragmentation as to the desirability of varying the crops of the self-supporting cultivator?—Yes.

15744. Could you tell me what your impression is as to the relationship of sub-division to indebtedness? Is not sub-division or the small size of the holding the main cause of indebtedness in this Presidency? We have heard of a number of causes, drinking habits, extravagance, and so on; but is it not, after all, the difficulty of obtaining enough land to cultivate which is the main cause of indebtedness?—I should say, not entirely. My general impression would be that the main cause of indebtedness arose outside agriculture.

15745. I have some figures here, which I want to test by your local knowledge. Here are some figures relating to indebtedness in Tanjore district in 1922. Particulars were obtained with regard to 1,600 cultivators in a 'wet' area. Of these, 705 were in debt, that is 44 per cent. The average holding was 1¼ acres. For the 895 who were free from debt the average holding is 10¾ acres? Now, in that area in which you have 705 men attempting to live on 1¼ acres each, it is impossible for them to get out of debt?—Yes.

15746. Does that state of affairs represent what might be a common experience in the Madras rice-growing area, about half of the cultivators with 1¼, 2, and 3 acres of land and in debt, and the other half with substantially larger holdings and free from debt?—I should not like to say whether the figures are correct or not, but I take it that the holder of rice land had also some dry land in addition to his wet holding.

15747. I gather from this statement that the land is classed as delta land; it may be rice or some other crop. The statement shows 1¼ acres of delta land; they are the only figures on the subject of indebtedness in Madras which I have come across. My object was to get from you some indication as to whether the impression I derived from reading them is a correct impression, or whether this district of Tanjore may be quite exceptional?—In the ordinary holding, if a man has 1¼ acres of wet land, it is practically certain that he would have 3 times as much dry land; that would not apply in the delta.

15748. *Dewan Bahadur Raghavayya:* From your experience as Collector, I believe you think that the officers of the Revenue Department are in much more intimate touch with the people than the officers of the other departments. I mean they have greater opportunities of moving among the people than the officers of other departments?—Yes, in general I should say it is so.

15749. I suppose they could exercise a certain amount of influence for good over the people among whom they move?—Possibly yes, but their influence is as a Revenue Department; they are chiefly engaged in collecting revenue.

15750. But they settle a number of disputes also in an informal way; for instance, questions of sub-division, transfer, and so on. Your Revenue Inspector stays for two or three days in a village?—Yes.

15751. The Tahsildar is expected to stay in a village for two or three days. Does he take any active interest in the welfare of the villages which he visits from the economic standpoint or from the agricultural standpoint?—I think some of them undoubtedly give advice to the panchayats. They do not give agricultural advice, because they are not competent to give it.

15752. Do you think that some knowledge of agricultural science and some knowledge of rural economics would enhance their usefulness to the people among whom they work?—I do not think that a smattering of agricultural science would be of the least good to the Tahsildar or the Revenue Inspector.

15753. What are your reasons?—Simply that if he has only a smattering of scientific knowledge he is not competent to advise. The people want a competent adviser who must be able to justify his advice and give his reasons.

15754. We have been told by the Director of Agriculture that an adequate knowledge of the science of agriculture could be imparted to a man of reasonable education within a short time, say within a year?—That is, rather a large slice out of the time of a man who is going to become a Revenue Inspector if he is to be trained for a year at the cost of Government.

15755. Do you mean to say that you could not recruit your Revenue Inspectors from graduates in agriculture or from people who have undergone a certain amount of training in agriculture and rural economics? Could you not get the existing staff of Tahsildars and Revenue Inspectors

to undergo training in agriculture and rural economics? They are all mostly graduates?—We can, but our Revenue Inspectors and Tahsildars are already very fully employed.

15756. But you have to take them on for training?—Yes, but even when they are under training, they have not enough time to go outside their own sphere. They have not got time to do this work along with their other work.

15757. They have not got time to do this work along with their other work; that is your opinion?—Yes, that is my opinion.

I am afraid I must differ from you there, from my experience as a District Officer.

15758. *Sir Thomas Middleton:* How many years does the Revenue Inspector serve?—30 years.

15759. One year out of 30 might, I think, be well spent in getting some agricultural experience?—He does not serve 30 years as a Revenue Inspector. He serves three or four years as a Revenue Inspector after that he probably is a clerk in some kind of office for a good many years; then he becomes a Sub-Magistrate and does no revenue work or he becomes a Deputy Tahsildar.

15760. I think the suggestion was not that he should get a smattering of agriculture, but that he should have some training in methods of agricultural enquiry and also agricultural practice?—I do not see why he should advise the ryots on agricultural practice.

15761. *Professor Gangulee:* Is there any possibility of the development of any industries in your district? I see from this Statistical Atlas that you have 28 tanneries in your district. Is there any scope for the development of other industries which could absorb the population?—There are a good many tanneries as you say but most of them are not paying very well now. There is also the sandalwood-oil-making industry. There are various moribund matchmaking industries.

15762. You do not think there is any scope for the extension of these industries which would absorb some of the population?—I do not know of any; there is a geological expert now looking for iron. Whether it can be developed or not I do not know.

15763. *The Chairman:* Have you ever noticed the change over in any district from food crops to money crops?—It has happened in my district. In the case of the ground-nut there has been a tremendous increase in the last 15 years. Since 15 years ago, there has been a tremendous rise in the area under ground-nut cultivation.

15764. Will you tell the Commission what your view is as to the effect of such a change on the welfare of the rural population in the most general sense?—I am not very sure, but I should think that possibly the effect is that it gives the ryot more money; but it is not so easy for him to get his food; I mean he buys his food instead of growing it.

15765. *Sir Thomas Middleton:* Is it quite certain that he pays for food in proportion to the area which he gives up for ground-nut?—It may happen that the substitution of ground-nut for *cumbu* improves the soil to some extent and thereby the subsequent crop of *cumbu*. He may reduce the acreage of *cumbu* but he may increase the crop.

15766. *The Chairman:* By improvement due to rotation?—I understand so but I do not know.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Wednesday, the 24th November 1926.

Wednesday, November 24th, 1926.

MADRAS.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.
Sir JAMES MACKENNA, Kt., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO OF PARLAKIMEDI.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU.
Rao Bahadur B. MUNISWAMI NAYUDU GARU.
} (*Co-opted Members*).

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH.
} (*Joint Secretaries.*)

Mr. H. M. HOOD, I.C.S., Registrar of Co-operative Societies, Madras.

Replies to the Questionnaire.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—There are 613,345 members in 9,617 co-operative credit societies and these are organised in 346 Supervising Unions. These Unions now act as agents for the district for the distribution of pamphlets and agricultural requisites. When it is considered that the bulk of the members of rural credit societies are dependent directly on agriculture for their livelihood and that these members almost certainly include all the most progressive of the ryots it stands to reason that the co-operative organisation is the obvious channel for all propaganda. For this reason field demonstration should be done at important centres of co-operative work. Demonstration plots should be located there and whenever possible special societies on the lines of the Lalgudi society [question 22 (*b*) (*ix*)] should be organised not only to demonstrate methods and produce but also to ascertain and publish financial results. It appears to me necessary to bring home the financial benefit more clearly than can be done by quoting figures obtained on an experimental farm under departmental management. I think that such societies which are there to demonstrate the efficacy of the methods preached by the Agricultural Department should be guaranteed against loss from causes other than mismanagement by the Government and that this guarantee should be a charge on the agricultural budget.

QUESTION 5.—FINANCE.—(*a*) I consider that the problem of providing short-term money to cultivators has been largely solved. It remains to develop the present system until there is a co-operative credit society in every village and also to develop the crop loan system of granting loans on produce held in the

Co-operative Loan Union's godown. This should give him ample short-term credit for cultivation expenses which he is unable to meet from the proceeds of his previous crops, to pay the Government kists which fall due at the harvest time and to carry on until a suitable time for selling his crops.

Long-term credit is a very different problem. The clearance of uneconomical debts, or rather, their conversion into co-operative debts, and permanent improvements of all kinds require long-term loans for which special provision is to be made. If the land mortgage banks now being started are a success there seems no necessity to look further for solution.

(b) Where funds can be supplied on a co-operative basis I do not think it necessary to push *taccavi* loans. In favour of the *taccavi* loan is the low rate of interest and the long period but against this is the general belief that departmental subordinates take a preliminary toll of every loan. There is frequently much trouble with Tahsildars and clerks and Revenue Inspectors and village officers and delay in getting the loan. Though additional staff is put on when the loans transactions pass a certain figure the work is not popular with the revenue subordinate staff. The question of passing *taccavi* loans through co-operative societies has been examined more than once. A great difficulty arises from the question of rates. *Taccavi* loans cannot completely replace the co-operative loans but can only supplement them. They are given at a rate lower than the rates which are possible for co-operative loans. The co-operative societies cannot give loans to non-members and either non-members would be able to get loans direct more cheaply than members or there would be a big differentiation in rates to members, some members getting cheap loans from the *taccavi* source others having to pay the higher rate from the co-operative source. The preferential rates of loans from *taccavi* source is likely to result in favouritism and heartburning.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(a) (i) and (ii). The main causes of borrowing are in addition to the reasons which involve men in debt in all communities—marriage of daughters, illness, improvidence, litigation and such things, vicissitudes of season and ignorance. There are a large number of ryots with small holdings able to carry on from year to year in average seasons but two or three bad seasons land them in difficulties from which a good season will not extricate them. They might repay their borrowings if they were straight debts with reasonable interest. In their ignorance or their extreme need, they frequently enter into transactions with the village *sowcar* which may look all right on the document but it is a common practice that the full amount specified as lent is not actually given. Only a portion of it is received and a further provision is made for repayment to be made in kind at the harvest at a specified very low rate and when it is further considered that the *sowcar* takes payment in grain according to his own measures it is obvious that the ryot will only get out of debt again with extreme difficulty.

In many cases again the *sowcar* acts as banker and agent for many ryots in his village, most of them illiterate. He supplies them with cash, disposes of their produce, pays their kists for them and keeps a running account which is balanced at intervals. It is not to be assumed that every *sowcar* is dishonest or exorbitantly usurious but as a class they do not err on the side of undue generosity. Apart from the steady requirements of domestic life the ryot needs money at certain festivals and to pay his rent whether kists to the Government or rent to the landholder. If he has not got the money, he must borrow it and the *sowcar* is not the only source. In rural India when there is no market for investments, any one with money looks for someone to lend it to, on the security of land and in this way there is a considerable amount of inter-lending between the more prosperous and the poorer ryots. Such loans are not necessarily at high rates of interest and 12 per cent. is an ordinary rate for a good first mortgage.

The reasons for not repaying are either that the ryot will not or cannot repay. Generally he is willing to repay but he cannot if the season is bad or the terms exorbitant.

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There is another class of debt on quite a different footing—remunerative loans taken to buy more land or to improve or develop a holding.

(c) In general, I do not think it desirable to attempt to control credit by limiting powers of alienation as this merely reduces the value of a ryot's assets without in any way helping him to meet the necessity to borrow when that necessity arises. It only has the effect of increasing the rate of interest he must pay to the banker to whom he is prohibited from hypothecating his land. But when lands are granted to members of co-operative societies the right of alienation may be restricted to the society itself, the society having full rights of alienation in the open market. The difficulty of making a general rule to this effect is that the members of an unlimited liability society cannot be compelled to admit any particular ryot or all ryots to membership.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(a) I cannot give any estimate but would observe that the slack season varies greatly from one locality to another depending on the nature and number of crops raised. It is very short when two wet crops and a green manure crop are raised and very long when a single dry crop is got. In the " off " season many ryots in the Ceded Districts weave coarse woollen blankets. The poorer tenants do cooly work or carting. On the other hand many weavers in the Carnatic are taking to agriculture as a subsidiary industry. The better class of ryot will not do these things. The slack season is a period of rest and recreation. It is also the marriage season and the season for litigation.

QUESTION 22.—CO-OPERATION.—(a) *Steps to encourage growth.*—The factors limiting development are

I. *Credit work*—

A. *Financial limitation.*—The bulk of the funds are short-term deposits. The demand is at present largely for long-term loans. The possibility of complying with this demand is limited by the funds available for long-term loans while the loans on short-term is limited by the lack of demand. There are ample funds for short-term loans. The requirements are therefore:—

(1) provision of long-term funds to meet large demand to clear off prior debts, mortgages, etc.;

(2) fostering short-term demand to take money to meet cultivation charges, pay rents and *kists* and hold up crops for favourable market and to repay on sale of crops.

B. *Supervision.*—The formation of societies could be pushed much more rapidly than at present and there are practically enough men available to do the routine administrative work of a small co-operative society but for stability it is necessary to arrange for something more than this. We must be reasonably assured that the management of the society have some sense of responsibility and sufficient realisation of what they are about. Shortcomings here are balanced by supervision from outside to some extent but there must be some business capacity and a rough knowledge of co-operative principles and methods. Both the supervising machinery and this knowledge can only be developed gradually.

II. *Non-credit societies.*—Much of this is new work and along several lines we are still only feeling our way.

(1) A staff is required to make preliminary investigation, work out definite schemes with careful estimation of the prospects of success. The official staff available is very small, the non-official workers are generally already fully occupied. This work calls for men having a large knowledge of co-operative methods, of the details of the

business to be taken up and of the men available to run the business, also sufficient judgment and common sense to form a sound estimate of the prospects of success and sufficient influence to command confidence;

(2) the successful conduct of non-credit societies demands business knowledge, energy and honesty. It is very difficult to find sufficient men in villages to run non-credit societies;

(3) there is, in general, considerable difficulty in raising sufficient share capital for societies which require buildings and machinery.

The steps to be taken therefore are—

(I) *By Government*—

(1) Elementary education should include general instruction on the principles and methods of co-operation;

(2) the provision of a larger official staff;

(3) subsidising educational courses to train a supervising staff;

(4) subsidising new developments which promise to be successful and beneficial but are yet only in the experimental stage until they are established.

(II) *By non-official agencies*—

(1) Conducting educational courses for training of supervising staff;

(2) development of non-official supervising agencies through unions and district councils and to make them fuller and more efficient;

(3) development of institutions and libraries, affording facilities for the examination of problems which are capable of solution on co-operative lines and generally encouraging study and progapanda with a view to the development of the co-operative movement on new lines.

(*b*) (*i*) *Credit societies.*—The main problems are two in this Presidency and they are to some extent intermingled.

A. Overdues are mounting. Under the Madras system a loan is given and definite dates are fixed for repayment. It is presumed that these dates and times of repayment are fixed by the primary society with a full knowledge of the probability that the borrower will be able to repay. If there are adequate reasons (*e.g.*, very bad harvest, illness, etc.) he can get an extension. Any amount not paid on the due date is an arrear unless an extension of time has been granted. The advantage of this system is obvious and every society knows exactly what sums are due to it at future dates. There are various reasons why these overdues are increasing:—

(1) Inadequacy of supervision;

(2) lack of sense of responsibility and slackness in primary societies—supervision should of course check this;

(3) irresponsibility in granting loans and fixing dates of repayment.

The first two are to be dealt with gradually by improvements to supervision. The third is materially different. The fact seems to be that ryots want money to clear off prior debts or for other purposes, and the amounts they require are in many cases larger than can be repaid in the period for which the loan can be given. In other words, he takes a loan agreeing to repayments annually knowing that probably he will be unable to pay though a smaller loan would be of much less use. This is acquiesced in by the primary society and, possibly

to a less extent, by the Supervising Union while the financing bank having a surplus of funds gives the loan to the society readily and in any case cannot control the loans by the society to its members. Arrears to the Central Bank are far less in proportion than those to primary credit societies. The remedy lies in arranging for more long-term money and a development of short-term business by loans for cultivation and other expenses on the security of crops and produce in godowns; there is, I believe, ample scope for this without these illegitimate loans on a short-term basis for what are actually long-term requirements. Land mortgage banks are being organized for this purpose of providing long-term loans and there is another proposal still under examination for floating debentures by central banks secured on unlimited liability and specified mortgages.

B. Money is coming into the financing banks at a faster rate than it can be utilised at present while there is an insistent demand for money for a period of years for which this supply cannot be safely utilised.

Some of the financing banks demand a more rapid expansion by freer organisation of co-operative societies but I cannot agree to a development of primary societies beyond the growth of supervision and efficient management; the proposal in fact verges on the reckless. The development of land mortgage banks putting negotiable debentures on the market will probably absorb some of the funds now being put in for shrot-term deposits and having to be provided for by fluid resources, while the development of loans on produce, whether standing crops or in godowns pending sale, should provide a larger and safer outlet for genuine short-term money.

(*b*) (*ii*) *Purchase societies.*—A. Purchase of domestic requirements, *i.e.*, what are ordinarily known as co-operative stores. So far as agriculturists are concerned these must be confined to the villages and to deal only in minor requirements, staple food grains, comprising the bulk of his needs he grows himself or can purchase from the producer at rates compared with which no co-operative society or shop can offer him any advantage. A co-operative stores in a village might provide him with clothes, vegetables and various other odds and ends. The cost of management would absorb any possible benefit to the ryot and would merely absorb the livelihood of a few perfectly harmless petty shopkeepers who eke out a precarious livelihood at the village and in the weekly *shandies*. The development of rural co-operative stores appears neither desirable nor economically possible. Societies of that sort to be run with any prospect of success must be confined to the larger towns.

B. Purchase of agricultural requirements, manure, seed, implements, cattle food, etc. A society formed for this purpose requires a man of more business capacity than is required for an ordinary village credit society and a main difficulty in forming such *ad hoc* societies is to find the men to run them efficiently. It is on the one hand undersirable to multiply the functions of a society and on the other with the difficulty in finding people to look after them, to multiply the number of societies in one place. Consequently there are a few purchase societies and in many cases the work has been tacked on to existing societies. This multiplicity of functions in a single society is most undesirable but must be accepted as unavoidable at the present stage of development. Unions have in many cases agreed to act as agents for the Agricultural Department for the distribution of agricultural requirements supplied by or through the Agricultural Department (*e.g.*, Konkan plough, Meston plough, seed, seed drills and occasionally manure). In addition, it is provided in the bylaws of all credit societies that they may obtain their requirements on joint indents and this is to some extent being done. In addition societies have been especially formed for the manufacture, distribution of manures and some of them have been successful financially, though in no case have their transactions reached a very large scale.

The following statistics indicate the work that has been done since the inception of the movement in the way of (1) joint purchase of agricultural

requirements by rural credit societies and local Supervising Unions and (2) transactions of agricultural purchase and purchase and sale societies.

(1) *Joint purchase of agricultural requirements by rural credit societies and local Supervising Unions.*

Year.	Agricultural requisites (monsoon ploughs and others).	Manure.	Cattle food and miscellaneous articles.	Total.
	Rs.	Rs.	Rs.	Rs.
1904-1908	..	..	..	*Nil.*
1908-1909	..	..	..	25
1909-12	..	..	..	*Nil.*
1912-13	..	..	..	420
1913-14	..	..	..	454
1914-15	..	..	..	931
1915-16	..	..	..	562
1916-17	..	..	..	12
1917-18	..	..	..	1,254
1918-19	..	..	..	3,113
1919-20	12,955	37,659	59,157	1,09,771
1920-21	11,474	46,069	32,690	90,233
1921-22	14,120	12,853	44,710	71,683
1922-23	3,369	10,671	76,986	91,026
1923-24	10,121	20,622	42,819	73,562
1924-25	27,896	9,144	12,630	49,670
1925-26	14,880	18,343	6,768	39,991
TOTAL	..	..	..	5,32,707

(2) *Transactions of agricultural purchase and purchase and sale societies.*

Year.	Value of produce sold to the public.	Value of goods sold to members.	Value of loans given on the pledge of produce.
	Rs.	Rs.	Rs.
1904-13	..	..	..
1913-14	..	1,983	..
1914-15	..	3,523	..
1915-16	..	4,463	..
1916-17	2,336	4,690	..
1917-18	764	8,145	..
1918-19	3,86,079	24,559	..
1919-20	24,233	3,66,923	..
1920-21	43,781	3,73,313	..
1921-22	2,81,072	2,54,646	..
1922-23	2,77,293	2,27,565	..
1923-24	3,92,481	2,56,030	..
1924-25	4,33,892	2,25,974	4,49,915
1925-26	4,76,593	1,83,981	2,18,592
TOTAL	23,18,524	19,35,795	6,68,507

(*b*) (*iii*) *Societies formed for the sale of produce or stock.*—These must be classified under two heads :—

A. those which provide for sale of agricultural produce;

B. those which undertake various modifying or manufacturing operations of agricultural produce prior to sale.

A. The condition of the agricultural population is at present such that the wholesale marketing of produce on a large scale can only be looked forward to as an ultimate aim to be diligently worked up to over a period of years. The more important items of produce pass through the hands of a long series of merchants and agents between the cultivator and the consumer. Generally speaking, it is at the bottom of the chain that the biggest profits (per bag) are made and it must be our aim to organise the cultivator on a co-operative basis to secure to the cultivator as much of these profits as possible. Beyond a certain stage, the profits after providing for expenditure, when divided among individual producers become negligible but seasonal fluctuation in the villages and local markets are considerable while the losses sustained by a cultivator being compelled to sell his crop in advance to the moneylender or merchants' agent who has financed him are very heavy.

The first step towards co-operative sale has been taken on this basis. Co-operative credit societies have provision in their by-laws to grant loans for cultivation expenses as ordinary co-operative loans. They have power to lend on the security of standing crops and further to grant loans or to extend existing loans on the security of produce harvested and held by the ryot pending sale. This does not materially assist the actual sale but it enables the ryot to keep his produce till the price has recovered from the harvest slump.

One stage further has been reached by the formation of special grain godown societies or unions. These have their godowns and receive grains or other produce. They are financed by Central Banks and given short-term loans on the security of the produce held in the godowns to be repaid in full on the sale of the produce. The produce is sold at the godown by the individual ryot. There is as yet no joint sale but the ryot is able to sell not to the agent or small merchant who comes round the villages but one stage further up to the merchant in the central place where the godown is located. At present the business in these godowns is too small and the produce pledged too varied in kind and variety and quality to permit of its being graded and sold jointly.

Independently of these societies which attempts are being made to multiply, there are a few established societies for the co-operative sale of particular products, *e.g.*, arecanut and paddy in South Kanara and the transactions of these run now to a considerable figure.

Societies for the sale of agricultural produce.

District.	Name of the society.	Joint sale of raw material and agricultural produce as agents.	Savings effected to members in 1925-1926.	Net profit or loss.	Remarks.
		Rs.	Rs.	Rs.	Rs.
South Kanara.	Garden Planters Co-operative wholesale society.	3,04,547	16,544	—9,294	
	Puttur Agricultural Co-operative wholesale society.	38,464	1,171	+4,385	The sales relate to arecanuts, rice and cardamoms.
	Bunts *alias* Nadavars Co-operative society.	1,03,910	1,463	—2,233	
	Palikere Tobacco Growers Co-operative society.	..	..	—1,075	
Madura .	Bodinayakanoor Cardamom Planters Bank.	12,87,130	3,07,196	+5,998	

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There are three main difficulties in developing this business :—

(1) the shyness and suspicion of the ryots which can be gradually overcome by the success of the societies as they develop, but its existence renders it the more necessary to go cautiously and to take no avoidable risks of set back by failure on account of bad management or dishonesty;

(2) the difficulty in finding suitable men to conduct the affairs of the society, particularly in the initial stages when there are neither funds to pay for administration, nor experience to inform the management; and

(3) the lack of adequate godown accommodation. These should of course be provided for out of capital but in view of the reluctance of ryots to find capital they have had to be built from borrowed money and the Government have come to the rescue by granting long-term loans to a few of these societies.

The transactions of the Orthanad Crop Loan Union show the advantages (ascertained by local enquiry) as follows :—

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Orathanad North.

Name of the produce. (1)	Quantity. (2)	Value if sold at the threshing floor under pressure or agreement to the sowcar. (3)	Value if sold at the village market at the harvest time. (4)	Value of produce when actually sold at the godown. Value of quantity sold. (5-*a*)	Value of stock on 30th June 1926 at market rate.* (5-*b*)	Total. (5-*c*)	Difference between columns (3) and (5-*c*). (6)	Difference between columns (4) and (5-*c*). (7)	Percentage of profit column (3) to column (6). (8)	Percentage of profit column (4) to column (7). (9)
	Lb.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
							Profit.		Profit.	
1. Paddy	113,520	5,027	5,343	726	6,116	6,842	1,815	1,499	36·11	28·05
2. Ragi (Kelvaragu) . .	21,736	1,013	1,106	81	1,211	1,292	279	186	27·54	16·82
3. Chillies	1,850	393	407	675	..	675	282	268	71·75	65·85
4. Gingelly	1,234	184	188	104	118	222	38	34	20·65	18·09
5. Bengal gram . .	16,902	642	664	25	655	680	38	16	5·92	24·10
							Loss.		Loss.	
6. Cholam	5,357	286	297	154	126	280	—6	—17	2·10	5·72
7. Tobacco	1,400	322	328	70	210	280	—42	—48	13·04	14·63
8. Cotton	4,000	230	240	211	..	211	—19	—29	8·26	12·08

*Actual value realised subsequent by sale has not been furnished.

It is to be observed that to these figures must be added a material but unascertainable benefit resulting from correct weights and square dealing.

B. *Manufacture and sale societies.*—A number of societies have been formed to undertake rice hulling, cotton ginning, ground-nut decorticating, sugarcane crushing and some of these have passed through many vicissitudes. Two have become moribund and one is flourishing. The main obstacles are common to all such non-credit societies—requiring considerable share capital, difficulty in raising adequate capital and finding the men to manage them. The most successful of them has however launched out into various diverse fields of co-operative activity including the stocking and distribution of agricultural implements, popularising improved sugarcane, demonstrating improved agricultural methods, etc. There is ample room for development of business of this kind at suitable centres, *e.g.*, paddy hulling, ground-nut decorticating, cotton ginning and pressing, manufacture of oil-cake, etc., but progress must be slow for some years to come as so much depends on finding the right man in the right place.

Mr. H. M. Hood.

Mr. H. M. Hood.

Statement showing activities of the Agricultural Industrial Societies in the Presidency.

District.	Name of Society.	Purchase of raw materials.		Sale of finished products.		Profit or Loss.	Remarks.
		Name of raw materials.	Value purchased.	Finished products.	Value sold.		
			Rs.		Rs.	Rs.	
Kanara, South	Udipi Agricultural and Industrial Society.	Coconuts	13,367	Coconut oil	15,730	+714	
Tanjore	Tanjore District Co-operative Manure Supply Society, Needamangalam.	Bones, etc.	2,892	Bonemeal, etc.	1,735	—167	
..	Shiyali Agricultural and Industrial Society.	It is proposed to liquidate the society.					
Arcot, South	Tindivanam Agricultural and Industrial Society.	The society does not make outright purchases but merely charges for converting raw materials into finished products.				—13,900	The society is just being revived. It got a gross income of Rs. 5,922 by disintegrating bones and decorticating ground-nuts.
..	Kallakurichi Agricultural and Industrial Society.	..	Do.	..	Do.	+3,371	The society earned a gross income of Rs. 15,488 out of rice hulling, decorticating, etc.
Coimbatore	Pallapalayam Agricultural and Industrial Society.	..	..	..	..	..	The society has just purchased a sugarcane crushing plant from Government.
Madura	Melur Agricultural and Industrial Society.	..	..	..	..	..	Has not begun regular work yet.

(*iv*) *Societies for improvements.*—Practically progress is confined to the formation of societies to undertake the clearance of silt from minor irrigation channels. Attempts to form a number of such societies for larger channels supplying several villages and have them combined in a union to correlate and control the shares of work of each of them have met with little success and ryots at present often prefer to leave it to the Revenue Department and the Kudimaramat Act.

The sinking of wells for irrigation requires long-term loans such as are given by Government as *taccavi* loans. It is to be remembered that in the dry upland areas where irrigation is most needed, the chance of striking rock at a very slight depth is considerable and the risk of failure to find water in paying quantities great. These areas are generally somewhat more backward in matters of co-operation and education than the richer deltaic areas where there is less demand for well irrigation. The problems of finding management, of raising capital and of the technical investigation of any scheme put forward render it desirable to confine our energies to immediate needs which can be met at once. A society has been formed in Malabar and is working satisfactorily and there is a demand for such societies in Chingleput and South Arcot districts. The main difficulty here is one of finance.

For the construction of fences there is no demand but societies were formed in Tanjore and Trichinopoly, financed by Government to clear the sand slit on rich wet land by breaches in the rivers during the floods of 1924. These societies have done a considerable amount of good work but have been brought to a standstill by delay in the construction of certain higher level channels which it was found were feasible for delivering water in the areas affected at a higher level and so obviating the necessity of clearing the sand away to the old level.

(*v*) *Fragmentation of holdings.*—Investigations show that for various reasons the formation of societies of the type which has done useful work in the Punjab is impracticable at present in this Presidency.

Fragmentation has not gone to the fantastic lengths reached in certain villages in the Punjab. There are so far as have been discovered no cases of fragmentation resulting in plots of land so small or mis-shapen as to be uncultivable. The greater bulk of ryots do not possess a number of small fields in different parts of the village. Several ryots in every village, particularly the bigger ryots do undoubtedly possess a number of separated fields and it would be an advantage if these fields were brought together into a compact block but generally speaking villages do not contain large areas of land even approximately uniform in value and there is usually a very great diversity in facility of access and of water supply. When some fields are very much more favourably placed than others in relation to water supplies and drainage, when a number of ryots who would be affected have no interest in the change in that they have now only one field, when fragmentation has not reached any extreme length, when the ryots themselves are sceptical and at least apathetic, when it cannot be shown that there will be an advantage even to a majority of them, it is not worth while at this stage to pursue the matter further.

(*vi*) *Societies for the co-operative use of agricultural machinery.*—I should like to deal with this question in two parts—

(1) Machinery for cultivation processes, including ploughing, sowing, harrowing, reaping and threshing.

(2) Machinery for finishing or preparing agricultural products—hulling, grinding grains, decorticating, ginning, baling and pressing, crushing sugarcane, etc.

The erection of machinery for the preliminary preparation of his produce for the wholesale market is a perfectly legitimate field for co-operative activity by the agriculturist. He is here in competition with a number of commercial concerns whose business is to take agricultural produce and prepare it for the consumer, and I see no particular reason why the agriculturists should not take this up within limits if he is able but I do not think it necessary for the Co-operative Department to make any attempts to push it or even to afford facilities

beyond the earliest stages. Many agricultural products undergo a long series of processes (*e.g.*, the expressing, refining, adulteration, etc., of oils from various oil-seeds). These are not agricultural processes and it is undesirable that capital which should properly go to the development of holdings should be employed for manufacture and trade.

The implements used for agricultural operations seem to fall into two categories—those necessary for improved agriculture to enable the farmer to get a good crop and those which are purely labour-saving devices. It is most important that co-operative enterprise should be fostered to the utmost to enable the ryot to get the most out of his land, but if by co-operative methods the ryot takes to mechanical devices, tractors, self-binders and the like which may involve a saving of cost to him, the venue of the problem of finding employment and a living wage for all members of the community has merely been shifted. If the problem of more profitable working of agricultural holdings is solved, the problem of finding work for an army of agricultural labourers is intensified. The introduction of labour-saving machinery into agricultural operations can only result in unemployment in areas from which there is already a considerable emigration of labour to Burma, Ceylon and the Straits.

Co-operative societies can be formed with the object of providing farmers with more machinery but not easily. The existing organisations are sufficient to supply improved ploughs which seem to constitute the most pressing need, but beyond this the greater the possibility for utilising machinery, the greater the difficulty in raising the necessary capital and organising and running societies for the richest and most developed tracts are the deltas. I know of no machine for transplanting paddy or picking cotton. A drill cannot be used for sowing seed beds and a self-binder would be in constant difficulties in paddy land on account of the field bunds necessary for impounding irrigation water. Tractors are not likely to be of general use for many years to come in the absence of mechanical skill to run them and other facilities for repair and replacements. When the time comes, it should be possible to have co-operative societies of small holders.

(*vii*) *Societies for joint farming.*—Societies have been formed in various parts of the Presidency to enable labourers to raise the funds requisite to obtain lands on lease, the lands so taken have been divided among the members for individual cultivation. Such societies could go a stage further by purchase of ploughs and cattle to be used by members in turn where the holding is too small to support a pair of bulls or an expensive plough but in practice I believe the present custom is for the member who has no cattle to hire his requirements in the village. Such societies have been formed also among tenant farmers in larger estates, where their tenure has been annual and precarious, to enable them to take their lands on longer lease and secure their tenure. This is an improvement on the system by which temples, *mutts* and large proprietors lease out their lands to men practically contractors who parcel out the land for cultivation among tenants, little better than farm labourers who obtain advances for seed grain and the like from the "contractor" and share the produce, and it is only by converting such a term labourer into a tenant with some security of tenure and an interest in the land that the best results can be hoped for from such land. Security of tenure and an interest in the land will however do very little without constantly hammering into the head of the half-educated cultivator by every means available the possibilities of and need for improved methods and material. The co-operative organisation is here invaluable. It must provide both capital and coercion. Some useful work has also been done in the Kistna delta on co-operative lines by enabling farm labourers to take up land and cultivate it giving each family enough and to supplement his earnings by farm labour for bigger ryots in an area where there is a seasonal demand for much labour. The funds were originally provided by Government but the security was the land on a co-operative basis. The original order that the grantee would not alienate his land was modified and it was allowed that land might be hypothecated to the co-operative society and in the event of the co-operative society obtaining possession in default of payment of dues by the member, the co-operative society was permitted to sell the land in the open

market. In this way members obtained the full market value of their land as an asset to cover co-operative borrowing but were precluded from foolish or reckless alienation of land as any alienation contrary to the terms of the original grant involved cancellation of the grant and reversion of the land to the Government.

(*viii*) *Cattle-breeding societies.*—No societies have been formed for the purpose of cattle-breeding. The necessity for improved stock and for getting rid of a vast number of inferior or useless animals is recognised by enlightened opinion, but all that has been done so far is the initiation of some cattle insurance societies. There is a Government Order providing for small subsidies being given for the maintenance of high grade stud bulls by societies. Attempts to form cattle-breeding societies have not yet been successful. Cattle insurance in its initial stages is a precarious business. It can be started in a small way and no single small society is likely to stand the shock of an epidemic or flood destroying a large proportion of insured animals. A guarantee has been obtained from Government to a limited extent for a few individual societies, but, in the absence of any reliable cattle mortality statistics, there is no safe guide for fixing premia and what I consider a very low premium has been fixed with a view to getting something started, but until sufficient societies are formed over a considerable area to enable provision to be made for reinsurance of individual societies in a union and until sufficient experience has been accumulated to enable us to fix a proper premium with some sort of accuracy, I cannot regard these societies as assured of success. The present premium allows a rebate in favour of animals inoculated against rinderpest and of castrated animals and the success of such insurance societies should encourage farmers to purchase better stock.

(*ix*) Co-operative labour societies have been formed in several districts and these have taken on considerable contracts for earth work, road repairs and the like works requiring largely unskilled labour. They have suffered from opposition from vested interest of contractors and from mismanagement, for it must be remembered that the men with experience of this work are the men required to manage such societies, and these are the contractors themselves, but the following statement shows the work actually done by these societies.

Mr. H. M. Hood.

Work done by Labour Societies during 1925-26.

District.	Number of societies.	Number of members. Actual workers.	Helpers.	Paid-up share capital.	Reserve Fund.	Borrowed capital.	Total value of the work. Pending execution at the beginning of the year.	Secured during the year.	Executed during the year.	Pending execution at the end of the year.	Gross income or gross wages earned.	Wages paid or income derived by Members	Non-members.	Net income of the societies. +	−	Bonus, if any, paid to members out of the net income.	Average income of the actual worker monthly or weekly. How does it compare with the market price ?
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)		(16)	(17)
				Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.							
Anantapur	1	41	..	454	..	..	..	..	..	..	..	..	..	33		..	
Arcot, North	4	152	10	1,515	253	2,697	2,119	18,519	15,293	5,345	18,605	15,380	112	3,114	258	..	
Arcot, South	2	49	7	162	155	453	..	5,992	1,581	4,411	335	77	48	5	296	..	
Cuddapah	7	96	..	946	51	2,744	1,368	6,008	2,861	4,515	659	3,241	..	452	..	..	
Godavari, East	1	65	1	112	100	1,260	150	1,287	1,437	..	1,437	1,328	..	81	..	..	
Kanara, South	6	129	55	1,468	3,069	20,921	38,887	81,490	44,000	76,377	1,985	7,060	29,821	649	270	..	
Kistna	1	8	..	11	..	53	..	..	..	..	..	..	..	..	..	..	
Kurnool	4	76	3	193	237	..	..	6,034	6,034	..	6,034	4,965	..	748	..	140	
Madras	2	109	..	826	4,305	1,457	..	19,940	19,940	..	..	20,211	..	..	3,010	..	
Madura	2	156	..	1,691	50	500	..	2,214	2,214	..	333	..	..	174	..	..	
Malabar	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	No transactions.
Nilgiris, The	1	48	29	216	5	..	..	..	..	..	..	..	..	..	..	..	
Ramnad	1	13	2	15	..	..	..	..	..	..	..	..	..	..	..	..	
Tanjore	6	906	..	4,945	10,084	49,553	1,251	1,98,357	1,63,728	35,880	18,140	46,653	17,167	9,442	..	2,404	
Tinnevelly	2	29	12	564	65	163	1,777	10,268	4,914	7,131	1,403	2,839	83	641	35	122	
Trichinopoly	6	272	76	2,779	164	7,300	5,716	87,895	74,111	19,500	6,798	7,554	10,023	3,731	..	185	
Vizagapatam	1	26	1	18	..	..	..	..	..	..	..	..	..	..	..	..	
TOTAL	48	2,175	196	15,915	18,585	87,101	51,268	4,38,004	3,36,113	1,53,159	55,729	1,09,308	57,254	19,070	3,869	2,851	

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These societies include many small ryots (Reddipalaiyam society) and they are enabled to augment their agricultural earnings very considerably and more profitably than if they had engaged individually on such cooly work as offered. The bulk are however labourers who find employment in agriculture for certain seasons of the year but are compelled to seek other employment for considerable periods. It cannot however be said that these societies are yet an unqualified success. There is ample scope for such societies but innumerable difficulties stand in the way.

One society recently started requires special mention as it is likely to be the forerunner of many others and I regard such societies as of very great importance for promulgating the improvements so long advocated by the Agricultural Department.

At Lalgudi a small co-operative society has taken 10 acres of land and is cultivating each part of it in two halves, one the time-honoured methods and the other under the guidance of the Agricultural Department. It keeps accounts and the results are tabulated below. Two or three other societies of this type have also been organised.

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Results of the first and second crops of the Lalgudi Sivagnanam Co-operative Agricultural Society for 1925-26.

Field No. (1)	Extent. (2)	Method of cultivation. (3)	Cost of cultivation per acre. (4)	Difference of saving in the cost of cultivation in adopting improvements. (5)	Yield of grain per acre. (6)	Extra yield of grain in lbs. by adopting improvement. (7)	Value if grain at 20 lbs. per rupee. (8)	Net income per acre. (9)	Extra profit per acre by adopting improvements. (10)
			First crop—(Kuruvai).						
	ACS. C.		RS. A. P.	RS. A. P.			RS. A. P.	RS. A. P.	RS. A. P.
1-a	0 ·25	All improvements	63 5 4	6 4 4	2,755	206	143 8 0	80 2 8	19 15 4
1-b	0 ·25	All local methods	69 9 8		2,549		129 12 0	60 3 4	
1-c	0 ·25	All improvements	64 7 0	3 4 0	2,723	443	138 10 0	74 3 0	25 13 0
1-d	0 ·25	All local methods	67 11 0		2,280		116 1 0	48 6 0	
4-a	0 ·20	Do.	72 8 9	..	2,605	..	132 10 1	60 1 4	..
4-c	0 ·20	Economic planting	68 10 9	3 14 0	2,946	341	149 13 9	81 3 0	21 1 8
4-d	0 ·20	Improved manuring	72 6 8	0 2 1	3,285	680	167 0 10	94 10 2	34 8 10
4-f	0 ·20	Deep ploughing	76 5 11	—3 13 2	2,826	221	143 12 7	67 6 8	7 5 4
4-e	0 ·20	All improvements	72 12 2	—0 3 5	3,578	973	182 3 9	109 7 7	49 6
			Second crop—(Thaladi).						
1-a	..	All improvements	54 8 4	10 3 4	2,360	—124	118 0 0	63 7 8	4 0 2
1-b	..	All local methods	64 11 8		2,484		124 3 2	59 7 6	
1-c	..	All improvements	54 8 4	10 6 8	2,352	..	117 9 7	63 1 3	10 6 8
1-d	..	All local methods	64 15 0		2,352		117 9 7	52 10 7	
4-a	..	Do.	64 1 6	..	2,347	..	117 5 7	53 4 1	..
4-c	..	Economic planting	62 14 9	1 2 9	2,528	181	126 6 5	63 7 8	10 3 7
4-d	..	Improved manuring	56 2 3	7 15 3	2,864	517	143 3 2	87 0 11	33 12 10
4-f	..	Deep ploughing	67 8 2	—3 6 8	2,578	231	151 4 0	83 11 10	30 7 9
4-e	..	All improvements	56 6 0	7 11 6	3,025	678	128 14 5	72 8 5	19 4 4

REMARKS—

First crop.

Local method.	Rs.	A.	P.
(i) Four ploughings with country plough	9	8	0
(ii) Sixteen cart-loads of cattle manure	23	0	0
(iii) Thirty-six M. M. of seed	20	0	0
Total	52	8	0

Improved method.	Rs.	A.	P.
(i) Three ploughings with improved plough	9	10	0
(ii) Eight cart-loads of cattle manure, 2,000 lbs. of green leaf and 84 lbs. of bone meal.	20	0	0
(iii) Fifteen M. M. of seed	15	13	0
Total	45	7	0
Difference in favour of improvement, first crop	7	1	0

Second crop.

Local method.	Rs.	A.	P.
(i) Two ploughings with country plough	5	0	0
(ii) 500 lbs. of groundnut cake	28	0	0
(iii) Cost of seed	15	0	0
Total	48	0	0

Improved method.	Rs.	A.	P.
(i) Two ploughings with improved plough	6	0	0
(ii) 250 lbs. of groundnut cake and 84 lbs. of bone meal	19	0	0
(iii) Cost of seed	13	0	0
Total	38	0	0
Difference in favour of improvement, second crop	10	0	0

Mr. H. M. Hood.

Results of the first crop kuruvai *of the Demonstration area, Pali Agraharam, Tanjore, 1926-27.*

Field number. (1)	Extent. (2)	Method of cultivation. (3)	Cost of cultivation per acre. (4)	Difference or saving in the cost of cultivation in adopting improvements. (5)	Yield of grain per acre in lbs. (6)	Extra yield of grain by adopting improvements. (7)	Value of grain at Rs. 5 per 100 lbs. (8)	Net income per acre. (9)	Extra profit per acre by adopting improvements. (10)	Remarks. (11)
	A. C.		RS. A. P.	RS. A. P.			RS. A. P.	RS. A. P.	RS. A. P.	
1	0·43	All improvements .	39 13 9	3 15 3	1,815	377½	90 12 0	50 14 3	22 13 3	
2	0·24	Local	43 13 0		1,437½		71 14 0	28 1 0		
4	0·46	All improvements .	39 15 9	..	1,305	..	65 4 0	25 4 3	..	General crop (a poor field). The owner of the land tells me that he got only 50 per cent. of the yield last year.
5-A	0·20	All improvements .	40 2 8	3 3 7	1,712½	462½	85 10 0	45 7 4	26 5 7	
5-B	0·20	Local	43 6 3		1,250		62 8 0	19 1 9		
		MANURIAL TRIAL.								
3-A	0·25	*80 lb. of Ammonium sulphate. plus 1 cwt. Super phospate + 6 cart-loads cattle manure.	50 7 8	—7 8 3	1,960	447½	98 0 0	47 8 4	14 13 9	* Ammonium sulphate and Superphosphate were supplied by Messrs. Shaw, Wallace & Co. gratis.
3-B	0·35	12 cartloads cattle manure	42 15 5	..	1,512½	..	75 10 0	32 10 7		

LOCAL METHOD.

	RS. A. P.
I. 5 ploughings with country plough	9 6 0
II. 12 cartloads of cattle manure	12 0 0
III. 36 M.M. seeds per acre	9 0 0
	30 6 0

IMPROVED METHOD.

	RS. A. P.
I. 3 ploughings with the Konkan plough . .	5 10 0
II. 6 cartloads of cattle manure + 40lb. Ammonium sulphate and 1 cwt. Superphosphate .	15 6 0
III. 14 M.M. seeds per acre	6 4 0
	27 4 0

Difference Rs. 3—2—0 roughly.

Question 22 (c).—If one legislates to compel a man to join a co-operative society, the voluntary basis of all co-operative enterprise disappears. In a village a large majority have numerous ways of bringing pressure to bear on a few recalcitrant individuals. I have known of several cases in which co-operative schemes for improving irrigation have been frustrated by lack of harmony and by opposition from one group to the good intention of another but I cannot quote any instance of the great majority being frustrated by a very few. Legislation of this kind would have to provide adequate safeguards against the influential few forcing their schemes on far more than a small minority and I would prefer to see legislation for such objects take the direct course of providing for statutory powers to a panchayat or committee to carry the matter through and not graft compulsion on to co-operation.

(d).—No, with the exception of certain building societies whose members have built the houses they required there is no finality. The great bulk of achievement up to the present is on the lines of co-operative credit and there though there is at this moment a surplus in the Central Banks not employed for co-operative purposes, the problem of providing adequate long-term money to liquidate prior debts on burdensome terms is only just being tackled. We have hitherto barely touched the fringe of rural indebtedness while such funds as we have for short-term purposes are, though what we have is, as I have said, not fully utilised, inadequate for the needs of the agricultural population as a whole. Much good has already resulted but by no stretch of the imagination can it be said that the object has been achieved.

Co-operative marketing is barely in its initial stage, and improvements to stock and dairy produce have not yet been affected by co-operative influences.

Rao Sahib K. DEIVASIKHAMANI MUDALIYAR, Joint Registrar of Co-operative Societies, Madras.

Replies to the Questionnaire.

QUESTION 5.—FINANCE.—(*a*) There does not seem to be a better way of financing of agricultural operations than by developing co-operative credit. Each village must have a credit society and every cultivator should become a member of that society and be afforded credit to the fullest extent. There is ample money available in the movement to meet all short-term requirements, but the ryot does not avail himself of the use of the money to the fullest extent. The various causes which prevent him from borrowing are being removed one by one. It is only when a solution is found to obtain money to pay off his prior debts, he will be free to borrow from his society for all his short-term needs. The ryot requires long-term money for purposes like paying off prior debts, sinking wells, purchasing land, etc. As is observed by me in my replies to question 22 (*b*) (*i*) the ryot borrows money for these purposes from his society and finds himself unable to repay the entire debt within the stipulated period with the result that he is treated as a defaulter. He does not therefore even ask for loan for a short-term purpose. The difficulty can be solved only when societies are able to raise long-term money. The method by which this can be done are (1) starting land mortgage banks, (2) permitting Central Banks to issue long-term debentures based on the security of immoveable property mortgaged to village credit societies. The latter question is still under examination.

(*b*) If ryots are to be induced to make fuller use of the Government system of *taccavi*, the loans should be through co-operative societies, but the difficulties in passing the loans through such societies are: (1) Societies have to adopt differential rates of interest. Those who are provided with loans out of the *taccavi* source will get money at a cheaper rate, and those who are accommodated from the societies' sources will pay higher rate. Differential rates will lead to favouritism.

(2) Societies cannot deal with non-members, and Government will still have to give loans to them. In spite of these difficulties I am inclined to think a trial may be given to pass the loans through co-operative societies in selected districts.

QUESTION 6.—(*a*) (*i*) *Agricultural indebtedness.*—It is often said that the ryot spends much money in marriages and ceremonies and thus gets into debts. I do not however think that there is much truth in the statement. A ryot owning and tilling land himself does not spend much in ceremonies. The main causes of borrowing are: (1) partial or full failure of crop, (2) loss of cattle, (3) purchase of land partly with savings and partly with borrowed money. The ryot finds that the debt incurred during one bad season cannot be paid off even during two or more successive good seasons. If his crops fail in succession or at frequent intervals the ryot is involved in chronic indebtedness, which it is difficult for him to wipe out easily. Similarly if the loss from cattle is frequent he becomes hopelessly involved in debt. If he saves a little money in two or three successive good seasons he wishes to invest it in purchasing further lands, but finds that his savings are not sufficient to purchase a suitable piece of land or the land which he wanted to buy. He therefore raises a loan. If unfortunately his crops fail again successively or at frequent intervals he is not able to pay the debt contracted.

(*a*) (*ii*) *Sources of credit.*—The sources from which the ryot ordinarily raises money are—

(1) Professional moneylenders who charge exorbitant rates of interest.

(2) Ryot moneylenders living in villages.

(3) Dealers in produce.

(4) Co-operative societies.

R. S. K. Deivasikhamani Mudaliyar.

It is the professional moneylender and the village dealer in produce who rob the ryot a great deal of the fruits of his labour. Sometimes owing to necessity and sometimes owing to ignorance the ryot resorts to these men. The result is that his debt increases disproportionately to the benefit derived.

(*a*) (*iii*) *The reasons preventing repayment.*—So far as the average ryot is concerned the reason preventing him from paying his debt is his inability. The reasons which bring about his indebtedness prevent him also from paying. There is also the method of repayment adopted by the professional moneylenders which prevents the ryot from making any partial repayment towards his loan. Professional moneylenders do not as a rule accept partial payments.

(*c*) It seems inadvisable to restrict or control the credit of the cultivator by limiting the right of mortgage and sale of his lands. The effect of the restriction of the kind suggested will be to increase the difficulties of the ryot. He will have to pay very much higher rate of interest on any loans which he may require for cultivation or for other legitimate expenses.

QUESTION 22.—(*a*) *Co-operation.*—There is no reason to be dissatisfied with the rate of progress made on the credit side of the co-operative movement in this Province. Though the progress was necessarily slow in the earlier years, the development made in later years was, thanks to the development scheme of Mr. Hemingway, rapid About 1,000 to 1,200 societies were added year after year. There were on 30th June 1926, 11,973 societies with a working capital of Rs. 1,132·80 lakhs. Of these, 10,178 societies with a working capital of Rs. 407·47 lakhs were for agriculturists. Although the progress already made is remarkable, there is great need for further development. There are over 40,000 villages left untouched and the total membership of societies represents less than 2 per cent of the population of the Province. The factor which stands in the way of much more rapid formation of societies than at present is the difficulty of arranging for supervision. Owing to illiteracy of a large number of members in societies, a great deal of outside help is now necessary. This help is given by what are called local Supervising Unions and District Federations of local unions and also by the Government staff. With the spread of primary education, the demand for outside help may to some extent diminish. The non-official supervising agencies cannot be created simultaneously with new societies. Societies can be formed only in villages where supervision can be arranged by affiliating the societies to an existing union and when the men in the new societies get trained in their work, the union can be split up into two or more. New societies can be started in a union area only when the union is able to supervise tolerably well the work of existing societies. Generally local unions do the work of organising new societies in their areas. A member of the governing body or the Supervisor does the work. Societies can be formed in new areas only by the staff entertained by Government or District Federations. Government cannot go on adding to their staff indefinitely, although they should give adequate staff to do audit of societies and to stimulate interest in non-official workers and to develop new areas or new lines of activities. District Federations have not at present got, as already said, sufficient funds to maintain a big staff for this purpose. In existing societies much consolidation work remains to be done. All the deserving persons in villages have not joined their societies. All the persons who have joined the societies have not availed themselves of the benefit derivable from them. This accounts to some extent for the present surplus money in the movement. Intensive work is being done now to remedy the above defects.

On the non-credit side the progress so far made cannot be considered sufficient. The Act of 1904 was considered to permit only the registration of credit societies. Further the problem of the day was how to reduce agricultural indebtedness. Naturally attention was given to formation of credit societies. In the later Act of 1912, provision was made for the registration of all kinds of societies. The management of a non-credit society is more difficult than that of a credit society. Men with the knowledge of the business to be taken up are required to manage a non-credit society. It is difficult to find such men in sufficient numbers in villages. Further a network of credit societies is necessary to make people learn co-operative principles and methods of work

before they could think of more elaborate and difficult forms of co-operative purchase and sale. There is also the difficulty of finding money required by these societies in their initial stages.

The steps that should be taken to encourage the growth of the movement are :—

(i) *by Government*—

(1) subsidising on a larger scale than at present institutions which undertake to do general propaganda and to train co-operators and the non-official supervising staff in their work.

(2) the provision of adequate official staff.

(3) financing certain types of societies, such as societies for the manufacture of manure, societies which prepare agricultural produce for the market, societies for the sale of produce, etc.;

(ii) *by non-official agencies*—

(1) general propaganda and teaching of co-operators and managers of societies in regard to their duties and responsibilities through institutions like District Federations,

(2) holding of periodical training classes for the staff of supervising bodies and organising a district non-official co-operative service through a District Federation of local unions,

(3) investigation of the possibilities of development on new lines.

(*b*) (i) *Credit Societies.*—It has already been said that the credit movement has made remarkable progress in this Province. It has done a great deal of good to the ryots. A sum of Rs. 10½ crores has been lent to ryots for various purposes since the inception of the movement. The benefit that the ryots derived both directly and indirectly must have been considerable. The help given is, however, not sufficient. The ryot wants loans not only for cultivation expenses payment of *kist* and purchase of cattle but also for improving land and paying off prior debts. Village credit societies do not at present give loans for more than five years as they depend for their finance upon Central Banks which receive deposits for one to two years and which are therefore rightly reluctant to lend for more than five years. A very large number of ryots who are members of these societies will not, however, be in a position to repay their debts within this period of five years if they take loans for paying off prior debts or improvement of land. Attracted by the easy method of repayment afforded by his society, a ryot takes, however, a loan for paying off a prior debt or for improving his land miscalculating his repaying capacity. Sometimes a creditor compels a ryot who has joined a society and has borrowed money from it for current needs to pay off his debt. Then the ryot is obliged to transfer the debt to his society hoping for better times and more income. Sometimes a ryot is anxious to get his debt transferred to the society in order to escape from the constant worry of his creditor. Having thus transferred his debt to the society which he would not be able to repay within the period allowed, he soon finds himself a defaulter. This accounts mainly for the increasing overdues. Once a defaulter, he is unable to borrow from his society even for cultivation expenses with the result that he is driven to the village sub-dealer in produce for help and the latter lends money on condition that the crop should be handed over to him on the threshing floor. The member is thus not able not only to pay off the debt to the society but is also deprived of the full benefit of his labours. The remedy lies in devising some method of finding long-term money. Land mortgage banks are organised and six banks have already been registered. If lands are not to pass from agriculturists to non-agriculturists, these land mortgage banks should lend for 20 to 30 years or more. There is also a proposal to find long-term money in another way. It is suggested that Central Banks may float long-term debentures secured upon immoveable property mortgaged to village credit societies.

(*b*) (*ii*) *Purchase societies.*—As soon as Act II of 1912 came into force, attempts were made in various parts of the Presidency to start agricultural purchase societies. The earlier societies, *i.e.*, societies started before 1917-18.

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confined their attention only to the supply of agricultural requirements, such as seed, manure, implements, cattle food, etc. They also did some work in the way of disseminating among their members knowledge of improved agricultural methods, appliances, etc. In the years 1919-20 and 1920-21 a considerable amount of intensive work was done with a view to develop the non-credit side of the movement. A number of purchase societies called Trading Unions were registered and they attempted to supply not only the agricultural requirements of their members but also their domestic requirements, such as cloth, food-stuff, etc. Most of these societies worked on the indent system, although one or two bought and sold a limited quantity of selected articles on their own responsibility. One society had one or two retail shops at *shandy* (weekly market) centres. These shops supplied only domestic requirements. It was found that the profit earned in these shops was not enough or was only just enough to pay for the salesmen employed. The shops were therefore closed and the societies naturally confined their activities to the supply on indents received of agricultural requirements only.

It was also thought that so long as purchases were made on indents received and at the risk of the requisitioners, credit societies can undertake to procure and supply the requirements of their members. So, during the two years of intensive propaganda work for the development of the non-credit side of the movement, the by-laws of credit societies were amended so as to enable them to act as agents of their members in the matter of purchase and supply of articles required by them. Local Supervising Unions were also permitted to buy stores as agents and distribute them to the members of their affiliated societies. The total value of the purchases made by these two types of societies amounted to Rs. 4·93 lakhs and that made by purchase societies proper to Rs. 17·52 lakhs.

(*b*) (*iii*) *Societies for the sale of produce or stock.*—When intensive propaganda work was done to form non-credit societies it was found that the formation of sale societies was more difficult than purchase societies. Ryots realised the benefit that would accrue by pooling their produce together and effecting a point sale. They found that between them and the wholesale buyer there were a number of middlemen—the village sub-dealer, the moneylender and the broker and the merchant at market centres—who deprived them of a large share of the fruits of their labour especially in commercial crops. They knew that the village dealer carried off the lion's share of their profits. Sometimes he gave loans for cultivation expenses on condition that the crops should be handed over to him on the threshing floor at a rate favourable to the dealer. Sometimes he gave loans on standing crops and secured the produce at a previously agreed rate. They also knew that the village dealer used false weights and measures. In spite of this, the ryots were not willing to join sale societies for effecting the sale of their produce on a co-operative basis. There was also the fact that one of the two successful sale societies working in South Kanara at the time sustained a very heavy loss owing to defalcations by its Secretary. People were therefore afraid to act. As a preliminary step, however, credit societies were induced to arrange for the sale of produce of their members as agents and they took power to do this by amending their by-laws. The total value of sales effected by these societies amounted to Rs. 4·26 lakhs but the work done was not much and the produce was found still to be handed over to the village dealer or the moneylender. Provision was therefore made later on in the by-laws of credit societies to enable them to lend for cultivation expenses on the same condition as the village dealer lends, *viz.*, that the crops to be raised should be pledged to the society and the produce when harvested should be kept in the custody of the society till the loan is discharged. The societies took power also to lend on standing crops as well as on produce pledged. The amount lent in this way during the last two years was Rs. 4·97 lakhs. Although the method adopted by the societies did not result in joint sale it enabled the ryots to hold up the produce for a better market.

Attempts were also made to form sale societies. There are at present 23 societies. They do not, however, buy and sell on their own responsibility. They give advances on the produce left with them in their godowns and arrange

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for the sale of such produce if so desired. They also act as agents of the village credit societies for the safe custody of the produce pledged by their members. Recently a few cotton sale societies have been organised and one of their objects is to encourage the growing of pure and high class cotton and putting it on the market. They also propose to introduce the system of grading.

The chief difficulty of the sale societies is to secure suitable godowns or granaries. Government have agreed to lend money to these societies to construct granaries.

There are a few societies which prepare for the market the produce of the agriculturists. These hull paddy, decorticate ground-nut, crush sugarcane and manufacture manure. Although these societies do not directly arrange for the sale of produce handled by them, sometimes sale is effected with their help. The chief difficulty of these societies is finance. One of these societies had taken a loan from Government under the State Aid to Industries Act.

The total value of the loans given by the sale societies during the last two years amounted to Rs. 6·68 lakhs and the total value of sales effected amounted to Rs. 9·08 lakhs.

The most successful of all societies are the arecanut and the rice selling societies in Mangalore.

(*b*) (*iv*) *Societies for effecting improvements.*—A few societies for clearing silt in village irrigation channels have been formed but their chief difficulty lies in the fact that they are unable to take any action on unwilling persons. They cannot put the Kudimaramat Act into operation.

One society has been registered to restore an abandoned tank in Kistna. With the consent of Government the ryots undertook to restore the tank at their own cost and divide the lands under the tank among themselves on certain conditions.

Societies for well irrigation can be started provided long-term money can be obtained. Government have been approached for help.

Societies have been formed in Trichinopoly and Tanjore districts for cleaning the sand deposited on wet land by the breaches in the rivers during the floods of 1924. Government finance these societies.

(*b*) (*v*) *Societies for the aggregation of fragmented holdings and their redistribution in plots of reasonable size.*—There are no societies of this type and the enquiries made showed that the need for such societies was not felt.

(*b*) (*vi*) *Societies for co-operative use of agricultural machinery.*—All village credit societies have provision in their by-laws for purchasing and hiring to members improved agricultural implements. A few societies have purchased these implements and hire them to their members. But no societies have been specially formed for the co-operative use of agricultural machinery except societies which prepare the produce of the agriculturists for the market such as societies for decorticating ground-nut, ginning cotton, crushing sugarcane and manufacturing manure. It does not seem desirable in the present state of development of the country that labour saving machinery should be introduced in agricultural operations.

(*b*) (*vii*) *Societies for joint farming.*—Attempts were made a few years ago to form tenant societies for joint cultivation in the deltaic tracts of the Tanjore and Trichinopoly districts and in other parts of the Presidency but nothing came out of them. A year or two ago a few societies have been brought into existence chiefly for the benefit of the agricultural labourers of the depressed classes. These societies obtain on lease lands either from Government or from landholders and divide them among their members for cultivation. In Erode taluk of the Coimbatore district a large extent of land has been assigned by Government to the people of the depressed classes and societies have been formed to help them to cultivate their lands. There is a proposal to put the members in groups so that they may own cattle and implements in common. The need for tenant societies is great in areas where middlemen intervene between the landholder and the tenants.

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(*b*) (*viii*) *Cattle-breeding societies.*—The attempts made some years ago to bring into existence cattle-breeding societies in Nellore and Coimbatore districts did not result in the formation of any society. But one or two societies which are intended to supply manure and to diffuse knowledge of improved agricultural methods maintained breeding animals with the help of the grant given by Government. Government give a grant of Rs. 100 to Rs. 150 to any society or individual who maintains a breeding animal. Although there are no cattle-breeding societies, two cattle insurance societies have been brought into existence but they have not yet begun work.

(*b*) (*ix*) *Societies formed for any purpose connected with agriculture, or with betterment of village life, but not specified above.*—Labour societies to find work during the off season for the agricultural labourers have been formed in various parts of the Presidency and these have obtained contracts for earthwork, road repairs from Government, District Boards and Municipalities. Their difficulties are great. They have to overcome the opposition of vested interests. In spite of difficulties they have done a considerable amount of work. A few societies to demonstrate the benefit which can be derived by adopting improved methods of cultivation advocated by the Agricultural Department have been started in certain districts. The advantages of these societies consist in a number of small ryots doing the work in their lands and seeing for themselves the benefits of improved methods.

(*d*) The societies already working have done a great deal of good to the agricultural population. They have given more income both directly and indirectly. There are instances in which the indebtedness has been reduced but the problem of lightening the burden of uneconomic debt as a whole has not yet been solved.

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Mr. H. M. HOOD, I.C.S. and Rao Sahib DEIVASIKHAMANI MUDALIYAR.

Oral Evidence.

15767. *The Chairman:* Mr. Hood, you are Registrar of Co-operative Societies in the Presidency of Madras?—Yes.

15768. And Rao Sahib Deivasikhamani Mudaliyar, you are Joint Registrar of Co-operative Societies in this Presidency?—Yes.

15769. You have both put in valuable notes of evidence which we have read, and the Commission has also before it the memorandum by Mr. J. Gray, I.C.S., who, I think, was the previous Registrar of Co-operative Societies in the Presidency?—Yes.

15770. I hope you, gentlemen, have seen the memorandum in question?—Yes.

15771. I understand it is agreeable to you, and certainly it is convenient to us, that you should both be heard together. Unless you contradict each other we shall assume that each agrees with any answer that is given by the other?—Yes.

15772. Before I ask any question, is there any general statement you wish to make in addition to what you have written, Mr. Hood?—No.

15773. Have you any, Rao Sahib?—No.

15774. Mr. Hood, how long have you been associated with the Co-operative Department in this Presidency?—Directly now, for three weeks.

15775. Three weeks?—That is now; before that I was in charge for ten months in 1923-24.

15776. In charge of what?—Registrar of Co-operative Societies.

15777. And you Rao Sahib what experience have you had?—I am connected with the movement from its very inception.

15778. When was the inception of the movement?—I was the Secretary of the second society started in the Presidency, and I was drafted into the post in 1905.

15779. So that you have seen the movement from its very beginning?—Yes.

15780. Now, first of all, on your note, Mr. Hood, I should like to ask you whether it is your view that the Agricultural Department is making full use of the co-operative organisation for the purpose of propaganda and demonstration?—I think they might possibly make fuller use of us.

15781. You agree with that, Rao Sahib?—Yes.

15782. You do not think that full use is being made?—They might make more use.

15783. You had experience of societies at work, Rao Sahib. Have you ever known the Agricultural Department getting into communication with the Registrar or with co-operative societies with a view to recommending any particular agricultural operation or improved variety of crop?—They do get into touch with societies, and with the officers of the department.

15784. Do you think it might be more generally taken advantage of?—Yes.

15785. Mr. Hood, on page 606 of your note you say: "Long-term credit is a very different problem. The clearance of uneconomical debts, or, rather, their conversion into co-operative debts, and permanent improvements of all kinds require long-term loans for which special provision is to be made. If the land mortgage banks now being started are a success there seems to be no necessity to look further for solution." Have you formed any views as to whether these land mortgage banks are likely to be successful?—I do not think

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* Not printed: Part of the official memorandum prepared for the Commission by the Government of Madras.

it is quite possible to form much of an opinion yet; they have only just been started.

15786. How far is it proposed to use co-operative organisations as a channel through which long term credit may be provided?—You mean existing societies?

15787. I am asking how far land mortgage banks are going to work through co-operative organisations?—They are co-operative societies in themselves and they will deal chiefly with individual ryots. They will also avail themselves of the advice of the panchayats of existing societies.

15788. They will?—Yes.

15789. Are they at work under your joint control as Registrar? Are you responsible for the land mortgage banks?—I am responsible for the general guidance of the co-operative societies.

15790. Perhaps you could tell us how these land mortgage banks stand in relation to the co-operative movement. Could you tell us how they fit in with your movement?—They are organised to float debentures on the basis of definite mortgages held by their members.

15791. Are those debentures secured on the individual's holding or secured on the aggregate of a series of mortgages?—At present I understand the debentures are being issued on individual mortgages. I think, however, it is not intended that that should be a permanent arrangement.

15792. Is it really the case that the practice you describe is universal at the moment?—Yes; I think so.

15793. There is no collective credit?—No, not at present. I think it is intended that that should be introduced at a later stage.

15794. So much for the security upon which the debentures are borrowed. Have Government taken up some of these debentures?—Yes, they have taken up half. They have agreed to take up half up to a maximum investment by them of 2 lakhs.

15795. Has the other half been taken up by the public?—Yes. Government will not take it up until the others take it up.

15796. Government take 50 per cent. and the public 50 per cent?—Yes.

15797. So much for the debenture capital. What about the share capital? —It is put up by the individual members.

15798. Can the public buy the shares?—No.

15799. That is definite?—Yes, but they can buy debentures.

15800. Are the shareholders individuals or primary societies, or both?—There are no primary societies as shareholders; they are all individuals.

15801. All individual cultivators, presumably?—Yes; that is the intention.

15802. Would you allow societies as such to become shareholders?—There is not much object in their becoming shareholders.

15803. The point has not arisen?—No.

15804. Must the cultivator be a shareholder before he can borrow?—Yes.

15805. What shares must he have?—One-tenth of the amount he requires as loan.

15806. One-tenth is the minimum?—Yes, at present; there is a proposal to raise it.

15807. Have any landholders come forward to lend money on the debentures?—Not to any extent.

15808. Does the landlord come forward and lend money on the debentures? —Not to any extent.

15809. Have any of them come forward to take shares with a view to borrowing money?—I have not got a list. But the zamindars have not come forward.

15810. Would you welcome them?—We do not want big landholders. They will not be satisfied with the amount of loan given by land mortgage banks; we have put a limit on individual borrowing.

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15811. What is the borrowing limit?—It is now Rs. 2,000.

15812. For individuals or on one particular transaction?—For individuals.

15813. So much for that scheme. Mr. Hood, would you care to tell us plainly whether in your view it is going to be a success or not?—It is my opinion that it will be a success.

15814. Do you agree with that, Rao Sahib?—I agree with it.

15815. Now, on page 606, you say Mr. Hood: "Where funds can be supplied on a co-operative basis I do not think it necessary to push *taccavi* loans." Would you go so far as to say that in any district where the co-operative organisation exists loans should not be made except through those societies?—No, certainly not.

15816. You would not go as far as that, Rao Sahib?—No.

15817. All you say is that it is not necessary to push *taccavi* loans. You would make them available?—I would make them available. There is always the non-member to be considered; we cannot pretend to have a monopoly; there are many ryots who do not belong to co-operative societies.

15818. You do not think it would be in the interest of the public generally to confine loans in districts where you have a co-operative organisation to members of the co-operative societies?—I do not think it necessary at all.

15819. On page 606, you say Mr. Hood: "In rural India when there is no market for investments, any one with money looks for someone to lend it to, on the security of land." On that point, have you any saving societies or investment societies at work in the Presidency on a co-operative basis?—There are some. They can, of course, invest in every society. But, it is not in every society that they do.

15820. They can invest by taking more shares?—Both by taking shares and by making deposits, but principally in different forms of deposits.

15821. What forms of deposits do these credit societies offer?—Principally savings deposits.

15822. Savings certificates?—They are on the same lines as the ordinary post office savings bank deposits.

15823. But run entirely by the co-operative movement; or do you sell the postal savings certificates?—The money is entirely in the co-operative movement.

15824. You are not an agency for collecting deposits for the post office system; there is no competition with it?—No; we are not in competition with it.

15825. What interest do you pay on your deposits?—4 to 6 per cent. in the Central Urban Banks and 7 per cent. in rural societies.

15826. On page 607, coming to the very important matter of supervision, you give it as your opinion that "The formation of societies could be pushed much more rapidly than at present and there are practically enough men available to do the routine administrative work of a small co-operative society but for stability it is necessary to arrange for something more than this." You are concerned from the point of view, I take it, that new growth in this movement ought not to be encouraged unless it is reasonably assured that the growth is sound that the educational side of the movement proceeds step by step with this growth?—Yes.

15827. Now I want you to tell the Commission what machinery you have at your disposal for measuring the soundness or the want of soundness in your primary societies? What touch have you at your headquarters with your societies?—Well, in the first place both I and my Joint Registrar are constantly going round on tour inspecting the various types of societies and discussing the matter constantly with everybody we meet, who has any connection with the movement. Apart from our own personal touch we have a number of officials who go round to inspect, that is to say, Deputy Registrars, Assistant Registrars and a large number of Inspectors doing supervision and

audit. All these are constantly in touch with the various non-official bodies and individuals.

15828. And both of you gentlemen feel that you as Joint Registrars have an insight into the working of these societies and are really able to judge whether they are sound or whether they are not?—We think we can.

15829. You probably agree with me that these long lists showing the number of societies and the amounts lent and so forth are not really very informing and are not a very reliable indication of the value of the movement, because the value of the movement depends in the main upon the vigour of the primary society, on the way in which the primary society is managed and upon the effect which the working of that society has on the general mentality of those members of the community in which the primary society is constituted? That really is the test?—Not only the mentality of the member but even more so, I think, his material position.

15830. At what rate does your primary society lend as a rule to individuals? —$9\frac{3}{4}$ per cent.

15831. And what is the average rate of interest paid to the ordinary moneylenders?—12 per cent. is the ordinary rate.

15832. So that you are about $2\frac{1}{4}$ point short of him?—Yes.

15833. Do you claim punctual repayment?—Yes.

15834. Does he claim punctual repayment?—To a certain extent of course. A good *sowcar* gives a certain amount of grace. It depends on the reputation of the individual who is repaying.

15835. You think the amount of grace which he gives compared with the grace that your societies are able to give is fairly represented by 3 per cent. difference in the rate?—Yes; our man can always get an extension of period if there is good reason for it.

15836. From the societies?—Yes.

15837. Perhaps I did not make my last question plain. Do you really think that your societies make as elastic an arrangement with the man as does the *sowcar*? Is it your view?—It is a much more elastic arrangement.

15838. It is sometimes claimed that the cultivator prefers borrowing from the *sowcar* rather than from the co-operative society because although the *sowcar* charges a few points more of interest he does not expect punctual repayment whereas the society does?—That is because he has got an eye on the land of the borrower.

15839. No doubt he has got his own interest in sight?—He does not insist upon repayment if he covets the land of the borrower or so long as the borrower is solvent, although he insists upon periodical payment of interest, in some cases.

15840. Do you think there is any danger that credit societies may degenerate into agencies for the provision of facile credit?—There is always a certain risk of that happening and that is why we are trying to organise more and more supervision to keep them in the straight and narrow path.

15841. Is there much borrowing from societies and re-lending by members? —I do not think so; there was a co-operative society of moneylenders in Ganjam; I think they re-lent their money.

15842. How far is it possible for you at headquarters to discover whether practices of that sort do in fact exist?—Certain cases definitely come to our notice.

15843. What is your system of providing management for your credit societies in this Presidency? Is it found from within the village community or do you provide it from outside?—We provide it only in the case of very poor societies; these are roughly 25 under an Inspector, who goes round and acts as father and mother to them and writes up their accounts and generally looks after them. They have their own board of management; but I do not think it does a great deal.

15844. How often do your Inspectors get round?—In the case of the depressed classes, the societies are under the control of the Labour Department and they have got an Inspector for every 25 societies; he goes round and helps the secretary in writing up the accounts; but in the case of other societies the management is constituted from among the members.

15845. Entirely?—Entirely.

15846. Subject only to audit by the auditor under your control?—Subject to the auditor and to the supervision of the local Supervising Union.

15847. The whole management is done by the panchayat?—Yes, by the board of management of the particular society.

15848. The panchayat of the society? Which really is the managing committee of the individual society?—Yes.

15849. What is the organisation? Is the supervising society a co-operative organisation?—Yes, it is a society registered under the Act. It consists of a number of societies situated within a radius of 7 to 10 miles. Each society sends delegates and from among the delegates the board of management of the union is constituted.

15850. Supervising Union, is that it?—Supervising Union, we call it.

15851. Have those unions any funds of their own?—The societies contribute towards the cost of the union.

15852. In proportion to their membership?—In proportion to the working capital. The financing banks also contribute.

15853. Let us assume that a new society amongst persons other than depressed classes is being formed; where does the initiative come from, the local Supervising Union?—Yes, it is supposed to.

15854. Supposed to?—Generally it does.

15855. I suppose that those Supervising Unions can in every case provide a thoroughly competent person to give advice to a group of villagers who wish to form a society?—Most of them can.

15856. It seems to me to be an important point. What is the calibre of the advice which these Supervising Unions can give?—The men who are actually giving advice are very largely Supervisors on about Rs. 30 a month. They have had a certain amount of training, nothing very methodical, but many of them have had a good deal of experience. I do not think, taken as a whole, they are as well up in the theory or the literature of the movement as they ought to be, but the bulk of them I think have a fair practical knowledge and a reasonable amount of common sense at the back of it.

15857. *Mr. Kamat:* Have you a training class for training these men?—Not running the whole time; training courses are arranged occasionally.

15858. *The Chairman:* Very well, it is the expert from the local Supervising Union who proceeds to the village; I suppose he shows them how to start their books and gives them some good advice; then he disappears?—Yes.

15859. Now is it your experience that an educated cultivator who has had perhaps half a day's advice from the representative of a Supervising Union can take over a society and run it satisfactorily?—He visits the society frequently.

15860. Does the representative of the Supervising Union get to the society often?—Yes, he is supposed to come every month, but in any case he goes there every two months.

15861. I suppose they get their books upside down, but the Supervisor puts them right; they learn by experience?—The primary society, just when it is started, has very little in the way of books.

15862. But the true spirit and ideal of co-operation is not a thing which people learn in half a day?—I am referring to the account books of the society.

15863. But, on the other side, it appears to me that it is far more important that there should be a genuine grasp and understanding of what co-operation means. Is any attempt made to teach them that?—Yes.

15864. How?—Not very methodically at present. The Provincial Union is arranging classes, and every year they last for 3 months. In the Chingleput district there are 36 centres where the panchayatdars of 10 societies assemble, and they are given a course of training and instruction with regard to their duties and general propaganda.

15865. When was it started?—Last year.

15866. Do you think that has begun to filter down to the societies?—The panchayatdars and members of societies assemble in convenient centres and get direct instruction.

15867. Are they proceeding on any particular text-books or literature?—There are certain subjects.

15868. Is there any syllabus or guide?—There is a syllabus.

15869. Is it in English or vernacular?—It is in the vernacular.

15870. How long is it? Is it a big document?—It is a small thing.

15871. Could you let us have a translation of it?—I will send one; we have not got one with us at the moment.

15872. I should be very interested to see it, if you could?—Yes.

15873. From your experience of credit societies you say that lack of supervision is the reason why frauds are increasing. Would you develop that point a little in relation to what you have been saying about supervision?—The ryots have not got to the stage when they will repay debts without a fair amount of badgering, and the more the movement grows the less attention we are able to give to each individual society by way of supervision.

15874. Should not your supervising machine grow step by step with the number of your societies?—It ought to grow in relation to the number of societies, but the machine at present consists of two halves; one is the official, which is more or less rigidly fixed; the other is the non-official Supervising Union with their supervisors, which is developing at a fair pace, but I do not think it has developed quite fast enough to provide for the additional supervision of its share of assistance, and also to make up for the fact that the Government share of the supervision is gradually decreasing.

15875. Why is the Government share of the supervision gradually decreasing?—Because the staff is fixed, and the movement is increasing.

15876. In proportion, it is decreasing?—Yes.

15877. Would you suggest that Government should increase the subsidy which it gives towards the movement in proportion to its increase?—That is what it amounts to.

15878. Would you suggest that Government should contribute towards the supervision of the movement in proportion to the increase of the movement, or would you suggest that the supervision be provided and paid for by the movement itself as it grows?—It is of course very desirable that it should pay for its own supervision.

15879. Have you any plan to bring that about?—If the present tendency continues, we shall soon be faced with a situation where non-official supervision has simply got to do it.

15880. I find it a little difficult to fit in this statement about the inadequacy of supervision with what you, Mr. Hood, and you Rao Sahib describe as the machinery by which supervision is provided. You both appear to think that the supervision provided by these unions is on the whole satisfactory. I understand that these Supervising Unions are capable of infinite expansion as the movement grows; are they not?—Theoretically they are, but the difficulty is always to find the men who will take the trouble to go round, and do the work. The paid Supervisor does a certain amount of it, but the union has not to have an army of honorary workers. Many of the honorary workers do a great deal of very useful work, but others do not do much.

15881. What class in the community provides those honorary workers, as a rule?—The agricultural and professional classes.

15882. Does the bar provide any?—Yes, there are lots of vakils in the movement. The Joint Registrar corrects me; he objects to my saying that there are many of the professional classes; he would prefer to say that there are a few of them in the Supervising Unions.

15883. In your experience, Rao Sahib, which class provides such people?—The ryots themselves.

15884. The ryots do it?—Yes.

15885. In this Presidency, you have not had a strong movement in the professional classes?—In the urban areas there is, but in the rural areas societies have been formed by the agriculturists.

15886. Is there no sign of any young men in the urban districts coming forward to work for the public in this way?—They do.

15887. Are there many of them?—Yes.

15888. Are they satisfactory when they do come forward?—They are generally full of ideas.

15889. You want hard work more than ideas?—We want chiefly hard work.

15890. It is not always the same thing; is it?—No, it is not.

15891. Would you agree with me that a certain proportion of these overdue debts owing to societies by members must be accepted as an indication that long-term credit is not available rather than that members are disinclined to pay their debts?—That is, undoubtedly so.

15892. How far, do you think, that is true?—It is almost impossible to say.

15893. Let me put it in another way. Do you think, there is a strong general demand for long-term credit? A great deal is talked about it?—I should say so.

15894. And do you agree with that, Rao Sahib?—I agree.

15895. For what purposes, in the main?—Payment of prior debts.

15896. Rather than for carrying out improvements?—Also for improving the land, sinking wells, and so on; our accounts show that 45 per cent. of the loans are given for payment of prior debts.

15897. Take the average cultivator who has got a large existing debt, which has been accumulating at compound interest, is it really within the scope of any water-tight financial scheme to finance that debt for the ryot, or must there be some subsidy direct or indirect? That depends, I take it, on the extent of the debt in relation to the ryot's paying capacity?—Yes.

15898. In any community, would it be true to say that there are a large proportion of cultivators, who are so deep in debt as to make it almost impossible to extricate them without some outside help? Do you think that would be true?—I do not think, it would be entirely true as a general statement, but it is very difficult to say, because, we have no very reliable figures of the expenditure and the debt.

15899. That is what I was waiting for. Do you not think that before all these schemes are floated it might be well to find out what, in fact, is the position?—The difficulty is to find it out.

15900. You do not know any means by which you can discover the extent of the debt?—No.

15901. Have you even found out what the mortgage is, which is registered?—It is not all registered.

15902. The mortgage debt is not always registered?—The repayment is not registered. The actual debt is registered, but unless you know the repayments you do not know where you are.

15903. I understand the original mortgage debt is registered on a stamped document, but the difficulty is to discover how far repayment has taken place; is that correct?—Quite so.

15904. That is not an insurmountable difficulty?—We could find it out. If we had a man on special duty and he sat down for a month, he would probably be able to let us have a fair idea of the various debts in a small area.

15905. I want your view about this, because it strikes me as important: Do you think it is really a business like proceeding to start co-operative societies and landmortgage banks and the rest of it, in order to relieve the indebtedness of the rural community, before you discover what that indebtedness is, or do you think that a firm effort ought to be made to assess the position as soon as possible?—We know that they have very considerable debts though we do not know precisely to what extent.

15906. So that, in answer to my question whether an important proportion of the cultivators in any district are so deeply in debt as to make it perfectly hopeless to attempt to extricate them, you can only say that you do not know the facts?—We do not know the facts in great detail; I do not think anybody does.

15907. On page 609, under the head of 'Purchase societies,' you are talking about purchase of domestic requirements. I want to be perfectly certain what society you are thinking of. Are you thinking of the ordinary retail co-operative society such as you are accustomed to see in industrial areas in Great Britain?—Yes.

15908. Retail societies?—Like retail stores in England.

15909. Supposed to sell only to members, but, in fact, quite willing to sell to the public?—Yes, quite so.

15910. And paying dividends at the end of the year out of the profits?—That is so.

15911. As a beginning, in this country it might be feasible to purchase certain necessities on a co-operative basis, so as to take the advantage of a large order, without undergoing any of the risks of retail trading; might it not?—Yes, but it means grafting that work on to a co-operative credit society practically.

15912. Do you advocate multiple purpose societies?—We do not like that.

15913. Would you rather have a single purpose society?—Yes.

15914. Then the next type of society you mention is the ordinary purchasing society?—Our purchase societies do not sell to non-members. There is a restriction that if any society wants to sell to non-members, it should get the sanction of the Government.

15915. That is the law?—That is the custom, not the law. The by-laws say that.

15916. In paragraph B. on page 609 in dealing with the purchase of agricultural requirements, you are not thinking of a society which purchases stock and takes the risk of trading, you are thinking of a society which buys collectively to meet the requirements of its members. Is that the idea? That is a different thing you see?—I do not refer specifically to the point. Some of them do carry stock and some of them do not.

15917. Some of them do trading, do they?—Yes. Some of these societies carry a certain stock and also deal in agricultural requirements.

15918. Do those purchasing societies which carry a stock all sell at cost price?—They sell at cost price *plus* enough to cover working charges.

15919. Have you laid it down definitely that multiple purpose societies are not advisable?—I know of no specific place where that fact has been stated. The by-laws do not permit other kinds of work. The credit society cannot do any work except as an agent of the members.

15920. Except as agent of whom?—If a credit society wants to buy stores, it should have an indent specifically received from the member.

15921. It takes no trading risk?—No. The by-laws distinctly say that the society should not undergo any risk.

15922. Do I understand that the purchasing societies as such are sometimes conducted merely as agencies charging working expenses and sometimes as

trading concerns, carrying the stock and willing to sell to members as they require their goods?—They do purchase stores but do no other work.

15923. No other work at all?—No.

15924. I want to turn to the tables on page 610 showing the agricultural requisites that have been bought. I notice that in the year 1919-20 purchase of ploughs, etc., shows a rise from zero to Rs. 12,955. The societies have also purchased Rs. 37,659 worth of manure and Rs. 59,157 worth of cattle food. How many societies did that business?—There will be about 100 societies. The number varies from year to year. Generally, credit societies do the work.

15925. I am only trying to get from you information as to how it comes about that you go from apparently zero to what are important increases in one year?—Intensive propaganda work was done from that year, *i.e.*, from 1919. There were a few transactions before, but they were not noted in any of the account books of the societies.

15926. You rise from zero to the figures I have mentioned, in one year. Then there was a very considerable fall as regards the ploughs sold in 1922-23, and the figures for 1925-26 are in some cases higher and in some cases lower than in 1920. I should like either of you to offer some explanation. It is rather curious? There was a very big development all round in the year 1919-20. But nothing since?—Still the work is there. In 1924-25 it was Rs. 28,000 and in 1925-26 it was 15,000. But sometimes credit societies do the work and sometimes they do not.

15927. I am afraid I am not quite getting to my point. You say you have been working all the six years from 1919 to 1925 and you have been able, by propaganda work, to increase the sale from zero to Rs. 12,000 odd in one year. Yet, in 1926 you have only succeeded, I should say, in barely maintaining the average. Could you not have gone on increasing the sale by further propaganda?—I cannot say exactly what the causes are for certain, there is a certain increase at first and subsequently it is stationary.

15928. It is rather curious, is it not?—Yes, it is curious.

15929. *Sir Thomas Middleton:* Was there the same agricultural prosperity in these years? The same intensive propaganda, the same money available, etc., as in 1920?—Some of those years were very nearly verging on famine years.

The last two years were not years of scarcity. There has been a heavy drop in the years of scarcity.

The Chairman: In 1924-25 it was Rs. 27,896 against only Rs. 12,955 in 1920.

Sir Thomas Middleton: I say the total expenditure has risen.

15930. *The Chairman:* So, you cannot offer any explanation? Nor can you, Rao Sahib?—It is only in 1920 that credit societies were permitted to purchase as agents of members. Before that the work was done but the reason why there are no figures from 1904 to 1920 is that credit societies did not do the work in those years. Intensive propaganda work was done only in 1919-20.

15931. Then it stopped?—The department stopped work. Later, much of the work was not done by the departmental staff but by the union staff.

I think you make a careful appreciation of these figures which are very interesting. I have not examined them myself, but according to Sir Thomas Middleton they vary in the aggregate expenditure more or less with the prosperity or failure of the season, etc., but in certain instances, like the ploughs, there is a reversing of that relationship. I think some attempt to explain that position might be rather valuable? . . . .

Dewan Bahadur Raghavayya: The scarcity does not exist all over the Presidency, but only in a few places. That does not, I think, account for the variation in the purchase.

15932. *The Chairman:* Yes, I understand. Now on page 611 you give a list of the names of important societies. I am asking you how it comes about that you do not mention agricultural and industrial societies which, another witness told us, had received advances of Rs. 18,600 under the State Aid to Industries

Act?—One such society is concerned with rice-milling and decortication of ground-nut. These are societies which sell agricultural products. The Kallakurichi society is not such a society.

15933. Is that a manufacturing society?—That is on page 615.

15934. Yes. I shall come to it. On page 615, some agricultural and industrial societies are mentioned in the statement showing the activities of the agricultural industrial societies in the Presidency. What I want to know from you is whether any of these societies receive grants under the State Aid to Industries Act?—The application from the Tindivanam society is now pending, but there has been no other grant under the State Aid to Industries Act.

15935. Were you consulted before that grant was given to the Kallakurichi society?—Yes. It was done at our instance. It was recommended by the Registrar.

15936. Are you considering the possibility of encouraging other manufacturing societies by grants of that nature?—Yes. Where necessary, in the ordinary course they are given Government subsidies.

15937. To go back for a moment to the selling societies. Are they proving a success on the whole?—I think I might say that they are a success. Very few of them, comparatively, in the Presidency, are not working properly.

15938. Would you tell the Commission on what basis they pay their members for the produce which they sell. You know the alternative, I take it, either they pay the market price when the crop is brought to the godown, or they may pay, say, 60 per cent of the estimated market price and the remainder after the sale has taken place. You refer to the selling societies at page 611, do you?—Yes, they do not sell on their own responsibility now. They give an advance of 50 to 60 per cent of the market value of the produce and after the sale is effected they make over the balance of the sale-proceeds.

15939. Now is the sale by individual lots according to the bulk which is brought in by members or is the material bulked and sold?—Generally individual lots; there is no bulking or grading.

15940. Is it not one of the principal advantages of selling on a co-operative basis that it gives you an opportunity of bulking and grading and claiming a higher price?—It is not prevalent in this country. The biggest rise in price so far as the ryot is concerned is between the harvest and the marketing.

15941. I do not quite see that that applies to the question; perhaps you will tell me how it does?—The advantage to be gained by a co-operative sale is that if he can get his crop to a godown and sell it himself to a fairly big merchant instead of selling it to the village *sowcar*, he reaps a very considerable advantage.

15942. I agree; but if he could reap a still further advantage by bulking and selling the produce, why do you not allow him to do it?—But it is not so great an advantage.

15943. But it would be an additional advantage?—Yes; it would be an additional advantage.

15944. Are you investigating the question of consolidating fragmented holdings by co-operative societies *ad hoc*?—We have made some enquiries on the subject.

15945. And what conclusions have you arrived at?—The general conclusion was that there was no demand for anything of this sort and that the formation of any such societies would involve an amount of time and labour out of all proportion to the results we could expect.

15946. You do not think that you might select a village where co-operation has really earned a good name and which is more or less convenient for visits from yourself and other officials, and there try a small scale experiment?—To consolidate holdings?

15947. Yes; that has not been considered?—It was considered.

15948. It was considered?—It was considered, but nothing has been done; there is not the same interest in the thing here.

15949. Is fragmentation of holdings an important problem in this Presidency?—Yes; I think it is an important problem.

15950. Would it be a very important contribution to the welfare of the agricultural community if by co-operative means you could induce consolidation of fragmented holdings?—There would be some advantage if it could be done.

15951. One or two general questions; are you borrowing from sources other than the land mortgage banks? Are you borrowing from the district banks at all?—We have a cash credit from the Imperial Bank; that is used for short-term loans.

15952. Is that an important part of your business? What is the extent approximately of that cash credit?—Roughly 60 lakhs.

15953. *The Raja of Parlakimedi:* You say your staff is rather insufficient for preliminary enquiries. Do you get the required help from the village panchayats and Taluk Development bodies?—There are no Taluk Development bodies so far as I know; there are Taluk Boards and we get no assistance from them.

15954. Would you welcome it from the village panchayats?—I do not think we should be very keen about it.

15955. For enquiries with regard to status of members and so on would not they be helpful to you?—It would be possible for them to give us some assistance; but I doubt if that would be of very much practical help to us.

15956. We have been told that Secretaries of societies have been making use of these funds for their own private use; would it not be better if Directors of societies were allowed to check balances periodically instead of waiting for Auditors?—You mean the panchayatdars?

15957. Yes?—They are competent to check the dealings at any time. The Secretary or the President keeps the cash balance. Any other panchayatdar can ask for the production of cash balances.

15958. But I believe they say they will only produce to Inspectors and Auditors?—That is because the particular panchayatdar may not be competent to assert his right.

15959. But there is a provision in the rules to that effect?—Yes; the panchayat is responsible for the management; keeping the cash balance is one of the items of the management; the panchayatdar can ask for the production of the cash balance from the Secretary or the President whoever keeps it.

15960. You say with regard to *taccavi* loans, that some portion goes to the pockets of the Tahsildars and Revenue Inspectors. Are not any preventive measures enforced?—The only preventive measure is that if the Tahsildar is caught, I presume he gets dismissed.

15961. But does the department insist upon any security being provided and the forfeiture of security when malpractices are discovered?—No; I do not think that is practicable.

15962. Do not important people like Tahsildars provide security?—No; no cash security.

15963. *Sir James MacKenna:* Mr. Hood, I should just like to have an outline of the organisation of the co-operative movement in this Presidency starting at the top downwards?—Official and non-official?

15964. Yes, official to begin with?—There is a Registrar and a Joint-Registrar with their office in Madras. The Presidency is divided up into eight Deputy Registrars' circles, the Deputy Registrar being principally in charge of non-credit work. Further, the Presidency is divided into 24 districts each in charge of an Assistant Registrar.

15965. Is any district still untouched?—No; we cover the whole Presidency. There is then a staff of Inspectors under the Assistant and Deputy Registrars.

15966. These are all Government officials?—Yes.

15967. Does that comprise the whole of the official organisation?—Inspectors and clerks are the end of the official organisation.

15968. Then the non-official organisation?—The non-official organisation is not quite complete. I should prefer to start at the bottom: There is the primary village society consisting of the individual members; they are collected by 30s, 40s and 50s into Supervising Unions which are under the control of the primary societies and at the same time control the primary societies and supervise them. The Supervising Unions are again combined into District Federations. That organisation is not quite complete; there are still 3 or 4 districts which have not got their federations. At the top there is the Provincial Union; that is the supervision side of it. The finance side is again independent.

15969. Is the audit done by Government agency or by non-official agency?—That is done principally by Government agency.

15970. Who does the audit of primary credit societies?—That is done almost entirely by the Government Inspectors.

15971. Do you think that official audit is desirable?—I think the Registrar is responsible for it under the Act.

15972. I know that, but do you think it ought to be done officially right through?—He cannot very well be responsible for it if it is not.

15973. Then as to your banking scheme, you have what you call the Madras Central Urban Bank and a large number of district Central Banks?—Yes.

15974. Is the Madras Central Urban Bank the apex bank?—Yes.

15975. The Provincial Bank?—Yes.

15976. What is the process of financing downwards? How do the funds percolate down?—The apex bank gets money from various sources and simply lends to the district Central Banks on their application.

15977. Without any reference to the Registrar in the case of the district Central Banks?—An application goes to the Registrar and another application goes direct to the bank who discuss the matter and generally wait for my recommendation before coming to any final decision on any particular loan.

15978. On any particular loan to any particular bank?—Yes.

15979. Is there any Government money in the Central Urban Bank?—None.

15980. It is all outside?—Yes.

15981. Has the apex Bank any power of inspection of the method in which the funds of the Central Banks are applied?—No.

15982. Have the District Central Banks any power of inspection or control over the money lent to credit societies?—Generally no. They look to the local unions for supervision but in practice there is practically none.

15983. Can the Registrar intervene to stop a loan from a district Central Bank to a credit society or group of credit societies which he thinks is not worthy of receiving a loan, or is the district Central Bank practically independent in the matter of loans?—They are practically independent in the matter of the loans they give. If we found that there was a probability of giving the loans carelessly, we should write to the Central Bank and advise them. We give them copies of audit reports so that they may know how their societies stand and if we gave advice of that sort I have no doubt it would be taken.

15984. You had no complaints from the Apex bank or from the district Central Banks as to the misapplication of their funds or as to unsatisfactory loans, given to subordinate societies?—No, except occasionally we get complaints of defalcation and delays in repayment and things of that sort.

15985. Is there any Government money in the movement at all in the Madras Presidency?—There is a loan under the State Aid to Industries Act to one society.

15986. That is a special thing?—There is a Government backing of building societies; all that money comes from the Government; loans to depressed classes are lent by Government; they also take up debentures in the land mortgage banks and there is cattle insurance.

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15987. Government takes up the debentures?—Yes.

15988. What about land mortgage banks? They are not run under the ordinary Co-operative Credit Act; therefore where is the capital for the land mortgage banks coming from?—There is the ryot.

15989. All the capital?—They float debentures.

15990. The debentures are taken up by Government?—Yes; not the whole, but half of it, subject to a maximum of half a lakh each for four banks.

15991. How many land mortgage banks have you?—Nominally six.

15992. I think you told the Chairman that the limit of loan was only Rs. 2,000?—Yes.

15993. In the case of these land mortgage banks, do you make a thorough scrutiny of the security, the encumbrances of the land at all?—Yes, I think that is what is hanging it up to a certain extent: the necessity for making as careful scrutiny as we can.

15994. Do you think you are going to make any contribution to the vast problem by what I might call slightly glorified ordinary co-operative credit societies? Do you think that a maximum loan of Rs. 2,000 is going to have an appreciable effect at all on agricultural indebtedness?—It will touch all the individuals whose indebtedness is less than Rs. 2,000; there must be a very large number of them. We do not propose to restrict it to that amount for all the time. It is only a preliminary restriction, so that the small amount of money we get in the first instance shall not go to two or three individuals.

15995. You are merely at the experimental stage?—Yes.

15996. You intend to work up to a bigger scheme when you make sure of your foundations?—We hope to work up to a very big scheme.

15997. *The Chairman:* Do you have check audits on the accounts of primary societies carried out by your own officers here and there from time to time?—Yes.

15998. *Mr. Calvert:* We call it a super-audit?—We call it a test audit.

15999. *The Chairman:* What do those test audits show?—Any discrepancies in the original audit. The original audit seems to be correct in most cases and no mistakes are seen.

16000. Who carries out the test audits?—The senior Inspector; the audit is done by a junior Inspector and the test audit is made by a senior Inspector or the Assistant Registrar.

16001. Where does the junior Inspector come in this hierarchy which Mr. Hood described to Sir James MacKenna?—He comes under "Inspectors and Clerks."

16002. That is not a test audit, is it?—The Inspector does the original audit; the senior Inspector does the test audit.

16003. Where does the senior Inspector come in this hierarchy?—He is in a higher grade of the same category.

16004. But you have no trained auditor attached to your own office whom you can send out from time to time to the primary societies to go through their books and see how things are standing?—No, we have no trained auditor in my office that I send out; every district has a senior Inspector.

16005. Attached to the district?—Yes.

16006. And that is the highest officer who ever carries out the audit?—Above him there is the Assistant Registrar who is in charge of the district.

16007. Does the Assistant Registrar in charge of the district ever sees the books himself?—He goes to the societies and sees the books.

16008. He sees them all?—Yes.

16009. He is the highest officer who sees the books; is he?—We ourselves do inspect individual societies.

16010. You see them yourselves?—Yes, undoubtedly.

And you look at the books, that is a test audit?

16011. *Sir James MacKenna:* Continuing the question of audit raised by the Chairman, who does the audit of the Central Banks and the Madras Central Urban Bank?—The Central Banks are audited by the Assistant Registrar.

16012. Who does the audit of the Madras Central Urban Bank?—That is done by a certified auditor.

16013. I think you will agree, Mr. Hood, that when you come to your larger land mortgage banks you will have to put up a machinery for the very careful investigation of encumbrances on the land?—That is one of the chief things we have to do now.

16014. Yes, on a small scale now, when your limit is only a couple of thousands. It will be quite a serious thing with higher limits. Burma has been contemplating land mortgage banks on a big scale, and we have been held up by tremendous and insuperable difficulties regarding the valuation and examination of titles of the land on which you propose to ask the public to take debentures?—That is our experience.

So that any experience you have may be of great help to Burma.

16015. *Professor Gangulee:* In reply to the Chairman you said you had no knowledge of the extent of indebtedness in the Presidency?—I do not know what the extent is.

16016. Do you think the re-settlement reports of different districts may be of some use to you? You have such reports available for Tanjore and other districts?—Yes; they might be of use.

16017. I find they contain some useful information with regard to the indebtedness of the peasantry, although the size of the holdings is not shown there. You have no knowledge of the extent of indebtedness. Before you form a society do you undertake any preliminary survey of any sort with regard to the people and with regard to the kind of cultivation?—There is a property survey.

16018. Who undertakes the preliminary survey?—The officer organising the society.

16019. And he submits that survey to you?—It would go to the Assistant Registrar in the first place.

16020. I want to be quite clear in my mind how you organise these societies. You have first a preliminary survey with regard to the people, their occupation and so on; then that survey is reported to whom, the Registrar or the Assistant Registrar?—To the Assistant Registrar.

16021. Then what happens?—He scrutinises the report, and if he thinks the society can be registered, he sends it on to the Deputy Registrar.

16022. And then?—The Deputy Registrar registers it.

16023. And the final sanction?—It does not come to the Registrar, except it be for a society of the special type when the Registrar's sanction is necessary.

16024. Please turn to Mr. Gray's Report, page 5. I have a little difficulty in understanding the table.* I have not been able to understand what you actually mean by short-term money and long-term money. You find the last column "paying off prior debts, Rs. 3,51,59,989"; are these short-term loans?—These are long-term loans.

16025. Let us see the first column "Cultivation." Is that short-term?—Yes.

16026. Then, "Purchase of cattle"?—That is a long-term loan.

16027. "Payment of *kist*"?—That is short-term.

16028. "Improvement of land"?—Long-term.

16029. "Purchase of raw materials for industries"?—Short-term.

16030. "Trade," "Education" and all that column is long-term, I suppose?—"Trade" is partly long-term and partly short-term.

16031. "Purchase of land"—Long-term.

* *Vide* Appendix II on pages 672 (*a*) and 672 (*b*).

16032. "Food and other necessaries of life"?—Short-term.

16033. So that in that list you find a mixture of short and long-term loans, but a great deal of it is long-term?—Yes, long-term not exceeding five years. Under the present circumstances we cannot give loans for more than five years.

16034. These loans are for paying off prior debts?—Formerly loans were given up to 10 years; the period was reduced to 5; and it has now been extended to 7 years.

16035. Would you call that long-term credit?—Yes.

16036. In view of this, I do not understand Mr. Hood's remark "I consider that the problem of providing short-term money to cultivators has largely been solved." In this table I find that long-term credit predominates?—That does not alter the fact that we have got more money at present than we can lend for short-term purposes.

16037. I follow that, in this list you have lent Rs. 3,51,00,000 on long-term credit?—Yes, but it is not nearly long enough.

16038. One of you (Mr. Hood) says: "The problem of providing short-term money to cultivators has been largely solved." The Joint Registrar (Rao Sahib Deivasikhamani Mudaliyar) says: "It is only when a solution is found to obtain money to pay off his prior debts, that he will be free to borrow from his society for all his short-term needs. The Rao Sahib places the importance of long-term credit before short-term credit, whereas Mr. Hood seems to be of a different opinion?—(*Mr. Hood*): "the problem of providing short money to cultivators has been largely solved" means we have got far more short-term money than we can use at present.

16039. As I understand the Rao Sahib, he wants to get rid of the prior debt?—Yes.

16040. Which you cannot get rid of unless you take recourse to long-term credit?—(*Rao Sahib Deivasikhamani Mudaliyar*): I agree.

16041. Where is then the success of your short-term loans?—(Mr. Hood) It does not alter the fact that we have been provided with a larger amount of short-term money than we can use at present. (*Rao Sahib Deivasikhamani Mudaliyar*): They could have borrowed much more than Rs. 1,50,00,000 for short-term purposes if their prior debts had been wiped out. That is what I mean.

The Chairman: It is rather difficult to see what you actually mean by short-term credit and long-term credit.

16042. What is your classification?—One year is short-term.

16043. Two to five years, long-term?—Two years can be termed short. One year up to the next harvest is short-term. I am afraid there is a certain amount of confusion arising from the fact that although we regard five years as long-term, long-term in respect of land mortgage banks would be 50 to 100 years.

16044. I understand, the explanation is not that you were preening yourselves on your success having in fact lent all the money on short-term loans, which are liquid but that you had no difficulty in finding cash to finance such short-term loans as you can arrange?—We can provide a great deal more than we can arrange.

16045. *Professor Gangulee:* You must satisfy the requirements of paying prior debts, cattle improvement and so on for which you need long-term credit; unless you satisfy those requirements short-term credit is not of much use?—No, I cannot agree with that.

16046. I think it is necessary to make it clear. Surely it is not suggested that there is not an enormous field for the expansion of short-term credit on a co-operative basis outside such short-term demands as would flow from a settlement of long-term debts?—I think there is still an enormous field for purely short-term loans.

16047. As things stand to-day?—As things stand to-day and it is that short-term credit that we want to develop to take up the money.

16048. It has not been solved? You say the problem has been solved?—What I have said is that we can at present, and apparently there is no reason why we should not go on doing it, get more money to lend out for purely short-term purposes than we can find an outlet for.

16049. How long does it take under the present procedure for a member to obtain a loan from a society? What is the procedure?—He has to go to the Secretary of his society and put in an application, the Secretary has to get the sanction of the panchayat; the application has to be sent to the bank and to the Supervising Union; the Supervising Union has to recommend the loan, the Central Bank has to pass it, and then the cash has to come back.

16050. Will you kindly give us an idea of the time?—Anything from 3 or 4 days to a month; 2 months is the maximum.

16051. Does it take a month for short-term credit? Suppose a man may want to buy seed for sowing?—There are other methods. The society sends a forecast and executes a bond in advance in certain areas, and they draw the money.

16052. Is the forecasting system common?—Not very common, but it obtains in certain areas; the developed unions do that.

16053. A month's delay in the case of a short-term loan is rather a serious delay; do you not think so?—It is rather serious, but on the other hand, he generally knows sometime in advance what his requirements are.

16054. Do you think co-operative societies can largely be employed in connection with the grant of *taccavi* loans?—It depends on how much money Government is prepared to put down in *taccavi* loans.

16055. It is not a question so much of money as of organisation. Could a co-operative society, as an organised body, undertake to do that?—It could do it; it could be done.

16056. Do you know whether this has been tried anywhere else in India?—I understand it has been done in Bombay.

16057. With regard to the sanctioning of loans, which is the authority with whom the final sanction rests?—It rests with the bank that gives the money.

16058. With regard to management of societies, what sort of men constitute the committee of management? Are they educated enough to understand co-operative principles?—In the urban societies they certainly are.

16059. I am referring to rural agricultural societies?—Apart from the depressed classes, in the rural agricultural socities, there is generally a panchayat of men sufficiently educated to understand what they are doing; they are able to read books.

16060. You do not think that want of education is a handicap in the management of these committees, and you do not feel that want of education, on the part of these members is a handicap to the development of the co-operative spirit?—I do not think that alone is much of a handicap.

16061. You do not feel it would be a handicap to the spread of the movement?—Generally, if the members are educated, they can better control the panchayat.

16062. I am talking about the members who are appointed as a committee of management; do you find that the lack of education in them is a handicap?—No, I think on the whole they are sufficiently educated to do the work they are required to do in the villages.

16063. How far is non-credit co-operative organisation expanding in this Presidency?—I think it is expanding very slowly; I have no means of measuring it.

16064. I understand that the duties of Deputy Registrars are chiefly to encourage the formation of non-credit societies; is that right?—The general control of the movement in their areas is in their hands. The object was to provide for special attention to non-credit societies, undoubtedly.

16065. You have 9 Deputy Registrars employed for the purpose?—No, 8.

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16066. On page 613 of your note there is a table with regard to the transactions of the Orthanad Crop Loan Union. I find that the whole transaction did not exceed Rs. 9,000, which is given in the 4th column 'Value if sold at the village market at the harvest time.' What is the basis of this organisation of the Orthanad Crop Loan Union?—It is a co-operative society with a share capital which has built godowns for itself, the object being to receive the ryots' agricultural produce into the godown at the harvest, to give advances on that up to the extent of 50 or 60 per cent. of its value and enable the ryot to hold his crop in that godown until he sells it.

16067. *Mr. Calvert:* Who sells it?—The ryot, not the union; at present there is no attempt at joint sale of produce.

16068. How does the union cover its expenses?—By rents and interest on loans.

16069. *Professor Gangulee :* According to the table on page 615 of your note, in the Tanjore district you have the Shiyali Agricultural and Industrial Society; is it a non-credit society?—Yes.

16070. Organised by the Deputy Registrar?—No, it was organised, long before the Deputy Registrar came into existence, by the Assistant Registrar.

16071. Its chief object was to supply phosphatic manure?—Yes, to supply phosphatic manure, and also grind bones; that is another form of phosphatic manure; and to do rice hulling too.

16072. From the investigations of the Department of Agriculture, we know that there is a great demand for phosphatic manure in this Presidency; do you know that?—Yes, there is a demand.

16073. It is proposed to liquidate the society?—Yes.

16074. Could you kindly give us the history of the society, why has it gone into liquidation?—Because the board of management took very little personal interest in its affairs; it was run by a series of wealthy ryots.

16075. But there were other supervisors; there was the Department of Co-operation to watch the proceedings and so on. Phosphatic manure is a commodity for which there is a demand, and it was run on a co-operative basis?—That may be so, but the fact remains that they manufactured a certain amount of phosphatic manure which they were prepared to sell at less than the market rate, but the ryots would not buy it.

16076. It would perhaps be helpful for us to understand the nature of your non-credit societies; could you give us some information as regards the activities of this particular society, when it was started, its growth and its death?—There never was much of actual activity of the society. They would do nothing for themselves; they obtained the advice of the Agricultural Department on what they were to make, and the manures that were likely to be of value. They got the advice of the Industries Department on the machinery that they ought to put up; they got their assistance to put it up. I think this was all done more or less free. They then came to ask for an Inspector to run the society. You see their activities did not amount to very much.

16077. Precisely. When they failed in spite of the facilities which you and Government offered them, is that not a case for enquiry?—I do not know what there is further to enquire into there.

16078. Why did they fail? Was it due to lack of co-operative spirit in the co-operative society?—Absolute lack of interest on the part of the promoters.

16079. *The Chairman:* You agreed with Professor Gangulee that there was a brisk demand for phosphatic manure in this Presidency. Are you sure there is a brisk demand at current prices, or do you mean that there is a chemical need for phosphatic manure?—There is chemical need, yes. I do not say that there is a very great demand; on the other hand, there is a demand because commercial concerns are selling quite a lot, both directly and now they are trying to sell through us.

16080. *Professor Gangulee :* Can you say that the co-operative movement in this Presidency has developed into a people's movement?—I think so.

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16081. It has touched the people?—Yes, I think so.

16082. You have non-official agencies very much interested in the co-operative movement, and you work hand in hand with those non-official agencies?—Yes.

16083. Can you mention one or two non-official agencies working in conjunction with you?—The whole co-operative organisation, the federations and unions and primary societies, are all working in co-operation with us.

16084. You say that you undertook an enquiry on consolidation of holdings, and you came to the conclusion that it was not a serious problem?—I came to the conclusion rather that there was no likelihood of finding an immediate solution for it by forming co-operative societies.

16085. Have you published the result of your enquiry?—No. It has been discussed at various times, and I have made enquiries myself and prepared a few maps.

16086. What is the total deposit in your Apex bank?—About a crore of rupees, I suppose.

16087. Lying idle?—Not so much.

16088. How much is idle?—About 35 lakhs.

16089. Rs. 35 lakhs are lying idle in the bank?—Yes.

16090. There is a demand for money from the cultivators in the country?—Yes.

16091. And the money is in the bank?—Yes.

16092. The water is there, the man is thirsty, but the water is not given to him?—What the ryot wants is not a loan for one year or for two years; he wants a loan for 15 to 20 years. The Madras Central Urban Bank could not give it for such a long period.

16093. *Mr. Calvert:* I want to begin with the last question of Professor Gangulee. You say that Rs. 35 lakhs are lying idle in the Provincial Bank. That 35 lakhs is part of your liquid resources?—We have got 35 lakhs there besides fluid resources.

16094. But if you have 5 crores working capital, you must have a very large sum in cash available to meet deposits?—Yes.

16095. Is it serving a purpose?—The 35 lakhs is in excess of what is necessary for that purpose.

16096. But you must have cash to meet any run on your bank?—Yes.

16097. You are bound to have a large sum?—We have got that and in addition we have Rs. 35 lakhs that includes the Rs. 15 lakhs lent to the Punjab; it is not lying idle, though it is lying idle in the sense that it is not used by the co-operative societies.

16098. That is what I want. You mentioned the Lalgudi society?—Yes.

16099. That is what we call a better farming society?—Yes.

16100. In that society, you are trying to persuade all the members to follow the advice of the Agricultural Department?—No I do not think so. We demonstrate what the result of following the Agricultural Department's advice will be. I do not think it can be said that we are or would be right in backing the Agricultural Department on technical questions. Our object is to show what the result of the Agricultural Department's advice is.

16101. You do not get the members to carry out the advice of the Agricultural Department?—No, I do not think we can do that, it is a matter of demonstrating to them.

16102. On page 606 you mention that there is no market for investments and any one with money seeks to lend it on the security of land. Is there in this Presidency growing up a body of agriculturist moneylenders?—There is a body of agriculturist moneylenders. I could not say whether they have become more numerous now or not.

16103. You have no idea as to whether they are increasing in numbers?—No. I have not a sufficiently intimate knowledge of them to be able to judge.

16104. Your primary societies at present take mortgage security in some cases?—Yes.

16105. Do they for those same loans take personal security in addition to the mortgage security?—No, they do not.

16106. On this question of small loans for long periods, is it your policy that the primary societies should give the small long period loans and the land mortgage banks the bigger long period loans?—No. The mortgage banks should take over the whole of the long period work, that is to say, heavy indebtedness and heavy encumbrances of land, etc., which cannot be repaid in less than 15 years, should be taken over by them. That business should be done solely by the land mortgage banks, and the short-term loans, which would include loans also for five or six years, should be attended to by the existing central banking system.

16107. But does not this present system of primary societies taking mortgage securities entail the giving of long-term loans?—It is long-term loans limited to five years.

16108. In primary societies?—Yes.

16109. You say that money is coming into the financing banks at a faster rate than it can be utilised; is that because you are giving too high a rate of interest?—To some extent it is true, but now the Central Banks have reduced the rate of interest. In spite of that the money flows in.

16110. At the reduced rate?—Yes, at the reduced rate. There is also the fact that the District Boards have placed their funds for investment in co-operative societies. We have got a further amount of about Rs. 125 lakhs of District Board money.

16111. Provident fund money?—Provident fund money, railway cess, general funds, etc.

16112. *Dr. Hyder:* What is this railway cess?—They levy a cess for constructing railways in District Board areas.

16113. Branch lines?—Yes, branch lines.

16114. *Mr. Calvert:* On page 609 there is rather a curious remark: "Some of the financing banks demand a more rapid expansion by freer organisation." But what are these financing banks? Are they under the control of individual shareholders or of co-operative societies?—Under both in most of the Central Banks.

16115. From which side is this demand coming: from the society or from individual members?—From both sides. The demand is to provide an outlet for the funds and it is made by all the members of the banks.

16116. Is the total of the societies' deposits in the Central Banks in excess of the Central Banks' power to lend out to societies?—No.

16117. I do not quite understand how the societies can demand an expansion?—Expansion not merely in the matter of new societies, but expansion by giving further loans. The primary societies, as shareholders in the Central Banks are interested in developing the business of that Central Bank.

16118. With themselves, not with other people?—With themselves and with other people. They are naturally interested in making the Central Bank as successful and profitable as possible.

16119. *Dewan Bahadur Raghavayya:* The bulk of the deposits in Central Banks come from the non-co-operative public?—Yes, that is so.

16120. *Mr. Calvert:* It does not seem very co-operative that village societies should demand a development in order to find an outlet for individual depositors' money?—To develop their own bank. It is their bank. They should develop it if they want their bank to be successful and profitable; because the more the bank finds outlets for its resources, the greater their chances of getting their own loans at a lower rate.

16121. It does not sound very co-operative. On page 611 I see there is power to lend on security of standing crops. Is it a first charge on those

crops?—They execute a bond, making it the first charge on the standing crops.

16122. That protects you from attachment by a decree-holder who has a prior decree?—No. I think the Government revenue takes precedence.

16123. Then a decree-holder who held an unsatisfied decree before you gave your crop loan will have a prior right of attachment?—Yes, I think so.

16124. You have not been able to get over that difficulty?—I do not know that we have ever come across any concrete example of that difficulty.

16125. You are trying to enable the ryot to hold up his produce till it has recovered from the harvest slump?—That is the idea. Paddy, I believe, is generally about the top of the market in October, the main harvest comes on in December, January or February.

16126. You allow him to hold it up for ten months?—It may be up to ten months.

16127. Is the difference in price more than the interest on the loan?—Much more, generally; in the case of paddy it is much more. The actual difference is rather difficult to assess in figures, because there is always the question of false weights and that sort of thing which are supposed to occur a great deal in the villages and we have no means of measuring that.

16128. But are you not in danger of getting your producer to undertake the functions of a middleman?—Yes; but that is more or less the object of co-operative sales.

16129. I think it is rather a risk, is it not?—No, I do not think there is any risk so far as having the stuff in the godown is concerned, because in the first place we only give loan up to 50 per cent. of the value of the produce obtained and, in the second place, the prices of food-grains fluctuate fairly regularly; that is to say there is a big harvest slump in the market and a steady rise afterwards.

16130. What is the usual period for a crop loan?—It is three months; but you do not get the maximum rise in that time; paddy is generally at its top price about October, so that if you limited the crop loan to 3 months as was suggested you would not get the maximum benefit for the ryot.

16131. On page 612 you say that godowns are being built from money lent by Government. What rate of interest do the Government charge?—6½ per cent., I think.

16132. For what period?—I do not know if it is for any specific period.

16133. What security do they demand?—I think it is on general assets; I do not know if there is any other security.

16134. Has any definite enquiry been made in specific villages as to whether or not the owners of fragmented holdings find much difficulty in cultivating their lands?—The only enquiry that I know of in that connection is an enquiry that I made myself when I had some maps made to tell exactly what the state of affairs was and what was the number of plots held by each *pattadar*.

16135. I do not think any one in the Punjab knew to what fantastic length the fragmentation had gone until we made the enquiry?—I have got maps of about half a dozen villages which I can show you, if you would like to see them.

16136. But some of the fields that you showed me on Sunday were as small as a quarter of an acre?—There are plots in villages as small as a quarter of an acre in extent.

16137. On page 617, is there not some confusion when you talk of labour-saving devices? Are you not confusing labour-saving with labour-improving devices?—I thought I had drawn a distinction.

16138. The ordinary implements proposed by the Agricultural Department are more labour-improving than labour-saving devices, are they not?—No.

16139. Would you say that the plough, the hoe, and the tractor are labour-saving devices, pure and simple?—Yes.

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16140. No, they are labour-improvement devices surely?—The tractor is not.

16141. The fields are too small for tractors?—That is what I say; it is of no use but it is a labour-saving device; so are the self-binder and the reaper.

16142. A thing like the hand hoe is a purely labour-improving device?—Yes.

16143. *Dr. Hyder:* Would you develop your argument, apart from this distinction between labour-saving and labour-improving? You have taken up the general position that it would not be to the economic interests of the people of this Presidency to improve their ploughs and other implements because it would lead to a certain amount of labour becoming surplus for which you would not be able to find employment? Would you develop this argument?—That argument applies to purely labour-saving devices; it does not apply to ploughs and other implements of that kind; it may apply to definitely labour-saving devices which, so far as I can make out, would only result in flooding the market with more cheap labour.

16144. Take the case of the plough?—The plough as Mr. Calvert points out is not a labour-saving device at all; at least an improved plough is not; it is a labour-improving device. Whether you use a good plough or a bad plough the saving of labour is not very great.

16145. I really do not see the distinction. Take the case of a holding which had been cultivated with two ploughs, but which you can now cultivate with one plough by the labour of one man?—I am not in a position to say whether it can be done, with one plough where two ploughs were necessary before.

16146. I take that case merely for purposes of illustration; whether it actually corresponds with the facts is immaterial. Since you have taken up this position that you do not favour the introduction of labour-saving devices because a certain amount of labour would be thrown out and would become surplus, I want you to tell me whether your position is tenable over a period of years or whether you are merely thinking of the immediate results?—I spoke of immediate results. The argument, of course, would not apply to an improved plough because that is supposed to produce a better crop from the land. Implements such as self-binders and that sort of things merely save labour; they do not necessarily improve the crop. We are thinking of a labour-saving device and necessarily the immediate result of that would, I presume, be unemployment among the labourers.

16147. You think it is not desirable that the door should be opened to the introduction of such devices, that is to say purely labour-saving devices on account of this fear of unemployment?—The door is open to the use of labour-saving devices.

16148. Yes; but as a matter of policy you are afraid of the immediate result, and therefore you would not advertise or encourage the use of such implements. Of course the door is open and no one can prevent the use of labour-saving devices?—No one can prevent the use of such devices but I do not think there is any necessity to push them.

16149. *Mr. Calvert:* I think you said in reply to the Chairman that you had no estimate of the mortgage debt of this Province. I think the Registrar General of Panchayats committed himself to 90 crores as the amount of mortgage debt; do you think that is at all accurate?—I have no idea.

16150. What is the area of these land mortgage banks?—At present there is one for each *firka*.

16151. What is that?—Roughly a third of a taluk.

16152. How many villages does it consist of?—It varies according to the locality. The idea is to cover five miles in every direction.

16153. Is their liability limited or unlimited?—Limited.

16154. What is the rule in regard to dividends? Do they pay dividends on shares?—Yes; I do not think there is any special rule; they pay dividends if they can.

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16155. What is your security for loans? For instance what will be the security on a loan for redemption of land?—The land itself, to the value of twice the amount given, that is to say, you would give a mortgage up to 50 per cent. of the estimated actual value of the land.

16156. You do not make the borrower mortgage the whole of his immoveable property?—No.

16157. So that although he had mortgaged to you, he is still free to mortgage the balance of the property to the moneylender?—Yes.

16158. Are you taking personal security in addition to the mortgage security?—No.

16159. What will you do if he fails to pay his instalment?—There is a provision that the society may take over the management of the land.

16160. Is it not very risky to take over the land?—It can be leased to other ryots.

16161. A friendly critic while comparing Madras and Punjab says that the general standard of intelligence and education is much higher in Madras, but there is less intensive education of the primary societies, with the result that these have not gone so far in developing first class talent in the movement itself. I understand you have not got any systematic machinery for educating the members of primary societies?—That is so.

16162. Are you thinking of asking for that now?—Yes; I have been contemplating going to Government and asking for a special additional Government staff for taking up the general education question and making the courses more systematic.

16163. Is it your idea that this staff should lecture to the members in their own villages or in centres?—The methodical work would have to be done at centres.

16164. You are not contemplating a peripatetic staff which would actually deliver lectures to members of the primary society in their own village?—I think we should have both because the central courses cannot touch all members of the panchayats; it is necessary that they should have some sort of lecturing and instruction on fairly methodical lines; that can only be given to them in the villages.

16165. The Chairman asked you about the members of your primary societies repaying loans; am I correct in saying that you do not give systematic teaching in the benefits arising from prompt repayments?—There is no specified syllabus of any such teaching; the local union is doing it.

16166. Are you trying to secure repayment by educating the member to see the advantage of repayment or just by using pressure without teaching him what he himself gains by repaying?—I think both; we hope to do it by education but in practice we have to do a certain amount by bringing pressure to bear.

16167. I see you followed other Provinces or led other Provinces in making the arrears recoverable as arrears of land revenue. Have you found that of much advantage?—It is an advantage, but we do not make very great use of it; it naturally involves a good deal of work on the Revenue Department; we have limited the number of cases that can be recovered in that way to 40 for each taluk per year.

16168. Do you think that that compulsory power is really of benefit to the movement?—In the present stage, yes; I should say so; it is a security power.

16169. Would you not allow members to suffer the penalty of their own remissness in controlling their fellow members?—I do not quite follow.

16170. The rule that members have to make good the loss of any defaulter does rather stimulate them to see that these repayments are made? By having that compulsory power you remove that stimulus?—Yes, to some extent.

16171. It rather weakens the moral fibre of the society?—Yes, but it strengthens its financial fibre.

16172. Temporarily?—Yes.

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16173. Is your staff drawn from the same castes and classes as the actual members of the societies?—Not entirely; a good deal of it is.

16174. Is it one of your objects that the staff in the same area shall be of the same caste or class as the majority of members in that area?—No; I do not think so; there has been no stated policy to that effect.

16175. What is the educational qualification you require of the staff?—The actual minimum qualification for the Inspector grade is a Secondary School Leaving Certificate, with an eligibility certificate and he is also required to pass in book-keeping.

16176. In economics?—There is no provision about economics; it is for Assistant Registrars and not for Inspectors. They get a practical training.

16177. Are your Assistant Registrars graduates in Economics?—Those recently appointed for the last two years are all Graduates in Economics.

16178. Are they now drawn from the Provincial Civil Service or are they specially recruited?—Specially recruited.

16179. Are they of the same class and caste as the actual co-operator?—Mostly; there is no specification to that effect.

16180. If we took your staff, would you find that they are sons or brothers or other relations of the members of the society from top to bottom, from the Deputy Registrar right down?—You would not find that they all were.

16181. You actually admit into your department men whose family are not themselves co-operators?—They may be, but we make no provision to that effect.

16182. You do not attach any importance to the fact that your staff should be exactly in sympathy with the people whom they are going to deal with?—They are in sympathy, I think; they come roughly from the same class.

16183. I gather from an answer you made to Professor Gangulee that your Assistant Registrars are not given power to register societies?—No.

16184. Is that not rather over-centralisation?—I do not think so.

16185. You centralise registering power in the hands of the Deputy Registrar?—The Assistant Registrar is in charge of the routine administrative work of the district; he controls the Inspectors and supervises the audit. The new development is entirely in charge of the Deputy Registrar.

16186. Who is in charge of liquidation?—The Registrar has the power of cancelling societies.

16187. Who is actually in charge of liquidation?—The Registrar in some cases, and the Deputy Registrar in some cases.

16188. Is the person who is in charge of liquidation work responsible also for registration?—No.

16189. So that he may have to liquidate societies for the registration of which he was not responsible?—The initiative comes from him; the responsibility is taken by a different officer.

16190. I could not quite understand your reply to Professor Gangulee about the delay which takes place when a primary society wants a loan from its Central Bank. What is the cause of the delay?—It has to go through the Supervising Union and from the Supervising Union to the Central Bank. When a ryot wants a loan he applies to the Secretary who places the matter before the panchayat; the panchayat passes a resolution sanctioning the loan; the papers then go to the Supervising Union; and if the Supervising Union recommends the loan it sends it on to the Central Bank. The Central Bank executive have then to meet and sanction the loan. The delay is inevitable, as at present, but there are methods by which it can be avoided. In regard to short-term loans the primary society can give a bond in advance and draw the money in instalments as required.

16191. Are your primary societies allowed a cash credit with the Central Bank?—Some of them are.

16192. They can then get the loan at once from the Central Bank?—Yes.

16193. From a statement* now submitted to us, I find that the vast majority of your *pattas* are Rs. 10 and less, that is the three acres class?—Yes.

16194. Have your societies drawn a large proportion of the members from that class?—Yes.

16195. Your movement has got down to the small *pattadar*?—It is the small *pattadar* that is chiefly affected.

16196. And the tenant?—Yes, but not so much.

16197. Could you tell us to what extent your movement has encouraged thrift among the rural classes? You have the share system?—Yes.

16198. And an indivisible reserve?—Yes.

16199. Those two together make up a fair sum?—Yes.

16200. Apart from those two forms of thrift you have deposits from members?—Yes.

16201. Any other forms of thrift?—No, those are the various forms of thrift; I do not know of any other.

16202. With regard to this question of officials and non-officials, I gather you have somewhere round about 500,000 members?—More than that; something about 600,000.

16203. What would you say is the total number of your staff paid by Government? Is it 100 or 200?—It is just under 300.

16204. So that, apart from the 300, the whole of the rest of the movement is in non-official hands?—Yes.

16205. Only a very small proportion of the work is actually done by Government officials?—Yes.

16206. *Mr. Kamat:* Taking the last point, have you a system of honorary organisers here?—Yes; we do not call them honorary organisers; we call them honorary Assistant Registrars.

16207. You mean they are paid men?—They are not paid; they are honorary Assistant Registrars.

16208. These honorary men are paid only their travelling allowance?—That is all.

16209. They are preaching the real principles of the co-operative movement in the villages, are they?—Yes, they are members of the governing bodies of unions.

16210. I want to know whether each and everyone of your districts has got a district bank?—Yes, with the exception of the Nilgiris and Ramnad.

16211. Except those two districts, all the districts have got district banks? Could you give me an idea of the total amount which your Central Bank may have in their hands awaiting investment which could be invested?—Sixty to sixty-five lakhs is the sum.

16212. Is that the total for the whole of the Presidency?—It is the actual sum in their hands. They could also use some portion of the over-draft given to them by the Imperial Bank.

16213. My experience of district banks in another part of the country was a little bit better. If you have only about 65 lakhs which could be lent out, how can you say that you have solved the problen of finance for the credit societies?—That is the surplus; it is an indication that for the present we have got more money than we can find an outlet for, for short-term purposes.

16214. Do you classify these godown societies as sales societies?—Yes.

16215. When as a matter of fact they do not conduct the sales themselves how can you classify them as co-operative sales societies?—They are societies to assist the ryot in selling his produce.

16216. But practically he sells the produce himself; you have no full control in selling it?—No. The sale is arranged by the society, but the risk is taken by the members.

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* See Appendix I to Mr. Macmichael's evidence, page 304.

16217. I want to know why you do not call them godown societies?—The present classification is as nearly correct as can be.

16218. Have you got real financing sales societies which manage the sales, for instance a cotton sales society, a jaggery sales society, or any such society? —Which would purchase from members and sell on its own responsibility?

16219. Yes?—We have not attempted it. That is the object of the societies but they have not attempted to do that work, it will be done later on if it is possible.

16220. Do you mean to say you have found some difficulty in establishing such sales societies here; that you have attempted it and given it up?—The societies are already there; the present by-laws provide for joint sale; their final object is joint sale.

16221. I am not asking about their object. I want to know whether you have in this Presidency concrete instances of societies conducting business on the lines I have described?—No, none.

16222. They have a large production in sugarcane and jaggery in Coimbatore district?—Yes.

16223. They have also a large amount of cotton?—Yes.

16224. In both these crops, I think, a sale society can be attempted?—There is a society at Tiruppur, one at Nandyal and another at Bellary.

16225. You said there were none?—These societies do not do the business on their own responsibility.

16226. Have you got any regular co-operative stores?—Yes, several. We have about half a dozen. Triplicane, Kodaikanal, Cordite Factory, Coimbatore, Nandyal, and there may be one or two more.

16227. In urban areas have you got building societies?—Yes.

16228. Where are they? In Madras?—All over the Presidency; in most of the big towns in the Presidency.

16229. Are they on communal lines, or non-communal lines?—They are general societies; actually I find them running on communal lines, although there is no specification to that effect. It follows that it would be so to some extent.

16230. Probably, rather inevitably, they have to be on communal lines?—Generally they take specific plots of land and they have to build their houses in groups and form a little community by themselves; so that they proceed more or less on communal lines.

16231. In Bombay they do it. Could you give me the percentage of losses in your primary societies, if there are any losses?—I do not think there is any loss.

16232. Practically the losses are negligible?—I cannot give you a definite percentage, but they are very negligible.

16233. *Rao Bahadur Muniswami Nayudu:* Is there any by-law or any provision compelling the primary societies to deposit their cash balances in a bank or elsewhere when they exceed a certain amount?—I do not think there is any such provision in the by-laws; I do not know of any.

16234. Is such a thing done in practice?—Yes.

16235. You know that there was one society at Pakala, in Chittoor district, which had a cash balance exceeding Rs. 6,000; that amount was in the hands of the Secretary for six years, and there was defalcation in respect of that money. Do you say that in that society there is any practice or understanding that the cash balance should be deposited with any bank?—No, there is no such practice; that is what was the matter in that society; the practice in that case was neglected.

16236. There is a case in which the Secretary had the cash balance in his hands without closing the accounts for three years?—He had the cash balance in his hands and the accounts were apparently doctored.

16237. Was a test audit carried out by the officers of your department?—I cannot say whether there was any check audit for that particular society.

16238. Was the fact brought to your notice before the defalcation occurred?—The defalcation had occurred before I took charge, I cannot say.

16239. Was it brought to the notice of your department?—I am afraid I do not quite understand the question.

16240. Was it brought to your notice that the Secretary had Rs. 6,000 cash balance in hand for a period of three years without closing accounts?—I think it is probable that some of the officers of the department knew about it.

16241. There was a Supervising Union there; do you know that the Secretary of that Supervision Union was the Secretary of that primary society also?—I know that.

16242. Was it not due to the fact that the two functions were combined in one man that the defalcation arose?—The combination of the two posts in one man must give facilities for the defalcation.

16243. Do you think that such possibilities of defalcation exist in other societies also?—I dare say they do.

16244. Is your department taking any measures to minimise the chances of such defalcation?—Not beyond general supervision and general control of the movement.

16245. Do you think that any rule requiring the Secretary of a society not to have any sum exceeding a certain amount in his hands, or to have it deposited at the nearest post office savings bank or any other bank, will be a sufficient safeguard?—No, I do not think it would be any better than a by-law that the secretary shall not misappropriate the funds.

16246. Do you not think that it will be a safeguard if the money is put into the savings bank, to be drawn only when the need arises?—According to existing orders, he has to remit the money at once to the Central Bank.

16247. You say there is some provision now that balances should not remain in the hands of the Secretary?—There is no written rule, but it is generally understood, and the officers of the department and the Supervisors are constantly urging on the Secretaries to remit all balances to the Central Bank.

16248. And, in spite of their urging, such things are occurring?—In spite of that, instances have occurred of the Secretary swindling.

16249. Did you consider the advisability of having a legal rule directing them to deposit the money?—I do not think so; I do not think the existence of such a rule would prevent a man from occasionally committing defalcation.

16250. In places where there are no regular banks or branches of banks, are there facilities for district banks to invest their money required for current demands in any bank, say, at the taluka headquarters or district treasuries?—Generally, there is a branch of the Imperial Bank, and their fluid resources are provided to a considerable extent in the form of cash credit.

16251. I am asking with regard to a district which may not have a branch of the Imperial Bank?—Any district can place its cash in Government hands for safety, but of course it receives no interest; it is merely safe custody.

16252. Do you find that co-operative societies have been established in zamindari areas to the same extent as in ryotwari areas?—So far as I know, there has been no survey to ascertain that fact. There are societies in both areas, but I do not know of any classification of their growth or of any attempt to find out to what extent they are growing in zamindari and non-zamindari tracts.

16253. *Sir Henry Lawrence :* About 10 years ago, a committee went round to investigate the general tendency of co-operation in different Provinces. Are you acquainted with their report?—I have a nodding acquaintance with it.

16254. Can you give me in any general terms a comparison of your movement here in Madras with that in any other part of India? Do you consider

you are more or less dependent on an official agency or more or less on a non-official agency?—Compared with other Provinces, for purposes of audit, we are dependent more on official agency than in Bombay and the Punjab; we have not a bigger auditing staff.

16255. Is your auditing staff included amongst the Inspectors?—The Inspectors consist very largely of auditors.

16256. Are they trained auditors?—Trained by the department. But the supervising official staff is, I think, less in proportion than in other Provinces; that is my impression.

16257. I was just making a comparison with Bombay in particular. Have you any idea of the Bombay system?—A very slight knowledge.

16258. Do you think, in Bombay, they pay their Auditors a very much higher rate than you do? They start on Rs. 150 and rise to Rs. 300; your Inspectors, I gather, start on Rs. 40 and go up to Rs. 100?—Yes; their Auditors on Rs. 150 correspond more to our Assistant Registrars in point of pay.

16259. I was surprised to hear you say that you have a bigger official audit in Madras than in Bombay. It is very official in Bombay, and conducted by men of higher status?—My impression is that we have got a very much larger number of them; I am not quite sure of the figures of Bombay. I think we have 230 Inspectors doing nothing but audit.

16260. *The Chairman:* What is their pay?—They start on Rs. 40 and go up to Rs. 100.

16261. *Sir Henry Lawrence:* Do these auditors have, as one of their special duties, to ascertain defalcations? Do they merely make the audit of the account or do they make enquiries as to whether the loans have been properly made out?—They are supposed to make an enquiry; it is part of their business.

16262. It is part of their duty?—Yes.

16263. Do you, in fact, receive many reports from them of things going wrong, of defalcations and wrong loans?—Actual defalcations are comparatively rare; there have been a few, some of them serious ones.

16264. You have something like 11,000 societies and 250 men inspecting their accounts, but the reports that things are going wrong are not very numerous?—There are very few cases of defalcations; there are only two cases of defalcation under enquiry at present; there are actually a few in criminal courts, pending prosecution.

16265. From that you infer that the work of the societies is being well done and that the inspection is being done satisfactorily?—I think, with my knowledge of the men that we have got, inspection is being done fairly well.

16266. In fact, the work of the co-operative societies is being well carried out, and you are satisfied about it?—Yes, certainly honestly.

16267. Honestly, that is the main point. At times, we find in certain particular districts a regular wave of dishonesty comes over. You have not got that experience?—We have experience of work in certain districts going very much wrong, but it would not be right to say that there has been very much defalcation. There may be stray cases here and there, but that is generally attributed to one or two particular persons with influence in the district.

16268. Amongst the inspecting staff?—Either the official staff or, in some cases, the non-official staff.

16269. Fraud arising and being spread abroad by certain particular persons with influence in the movement?—Yes.

16270. Have you been able to bring them to book?—One man we are after is, I understand, at Marmugoa, and we cannot get at him.

16271. Is the movement taking root in certain districts very much more markedly than in others?—It has spread all over the Presidency. It has taken better root in certain districts than in others; it is run more efficiently in some than in others; there is considerable disparity.

16272. Is that connected with the economic condition of those particular districts?—Very largely.

16273. The Bombay percentage in villages varies from 2 per cent. in certain districts to 52 per cent. in others; can you give me your percentages? —We have got 11,000 societies for 50,000 villages.

16274. You have not worked out the percentage?—We have not.

16275. Could you do so?—Yes.

16276. What are the economic conditions that are favourable for the spread of the movement, and what economic conditions are not favourable?—The richer deltaic tracts are generally the areas where it has developed most.

16277. With wet cultivation?—Yes, both on the East and West Coasts, and the least development is in the poorer upland tracts. Education of course follows this.

16278. You say the tenants and agricultural labourers have some share in this movemnet?—Yes.

16279. Have they got a sufficient share?—It is desirable to organise them much more fully than they are organised at present, on a co-operative basis.

16280. For instance, would the depressed classes be admitted as members of a co-operative society in a village?—I could not say as a rule that they would be. They are of course admitted, but not invariably.

16281. What percentage, 1 or 2?—Of the total number of members?

16282. Yes?—It would be rather more than that.

16283. Could you give a figure?—I do not think I could give you the figure; of course, they have got their separate societies as well.

16284. They have societies exclusively for depressed classes?—Exclusively for them, principally under the Labour Department.

16285. That does not come under you?—I provide the Inspectors for supervising them.

16286. How many such societies are there?—About 700.

16287. Can you give me an actual figure later on?—Yes.

16288. The actual figures given in Mr. Gray's note* are labourers 34,000, tenants 58,000, and number of societies 509?—That would be about correct.

16289. Would these depressed classes come under the heading of labourers? —Yes.

16290. Would there be any of them under the heading of tenants or landholders?—There is a very small number among tenants; some of these tenants have taken lands on a co-operative basis.

16291. *Dr. Hyder:* What did you say was the number of societies for depressed classes?—About 700. Of the 1,738 societies for the depressed and backward classes, 1,024 are in charge of the Labour Department.

16292. *Sir Henry Lawrence:* Mr. Gray in his note spoke of the necessity for making satisfactory arrangements to meet the increasing demands on the audit staff. Are you strengthening your audit staff, or are you having any difficulty in getting the necessary funds?—We are trying to strengthen the non-official audit staff by formation of more audit unions.

16293. For that you do not require more funds?—These societies themselves provide the funds required.

16294. So, there is no financial difficulty?—No financial difficulty at all.

16295. Then in Mr. Gray's note the expenditure on food and other necessaries of life is given as amounting to Rs. 88 lakhs. Is it customary to give advances for food?—Yes.

16296. You include them under the head "productive purposes"?—They are, I think, short-term loans.

16297. Is that done in other Provinces, do you know?—I do not know.

* Not printed. Part of the memorandum prepared by the Madras Government for the Commission.

16298. There has been a tendency for an increase in the percentage of principal overdue to the total demand? That is due to some extent to the inability to give long-term loans?—To some extent.

16299. How is it possible to meet that difficulty?—We are trying to meet it by providing long-term money through the debentures.

16300. And that will dispose of that point?—We hope so.

16301. You mentioned that there is some difficulty about giving *taccavi* because the rates vary, the rates at which Government advances to individuals and those at which co-operative societies give their loans. That difficulty of course occurred in Bombay but it has been overcome and the rate is the same whether the money is obtained by the society from the Government as *taccavi* or not. Can that system not be adopted here?—There has got to be a difference of rates somewhere. Week in and week out the societies lend money to the people. Any non-member can get money from Government cheaper than a member of the co-operative society.

I would only suggest that you might compare notes with the Registrar in Bombay to see how the difficulty met with there has been overcome.

16302. *Dewan Bahadur Raghavayya:* You could now reduce the difference in the rates on account of the low rate at which you get the money from the public. The Central Banks have reduced the rate of interest we were told just a little while ago. They have reduced their borrowing rate because they have got a good deal of money which is lying idle?—They have not reduced their lending rate.

16303. *Sir Thomas Middleton:* Surely if money is abundant the rate must be cheaper?—They cannot make this money available to the ryot at this rate. What the ryot wants is long-term money and not short-term loans. The Central Banks cannot lend it for more than five years.

16304. *Sir Henry Lawrence:* You find that the borrowers are in the habit of taking money from outside sources as well as from the co-operative societies?—Yes.

16305. And when they apply to the co-operative society for a loan there is considerable delay in the inevitable investigation that has to be made?—I do not think there is much delay on that account.

16306. You do not think they have to go to the *sowcar* for an immediate loan paying a certain rate and then borrow from the society in order to repay the *sowcar*?—I do not think so.

16307. That is so in some other parts of India?—I do not think it is so to any material extent in Madras.

16308. *Sir Thomas Middleton:* You express the view that additional aid might be given to the co-operative movement by the Agricultural Department. I was not quite clear whether you meant that the aid might be given by the department as constituted, or whether, in the event of the Agriculture Department being increased, there was much work which it might do for co-operative societies. Do you mean that the existing Agricultural Department is not doing what it might for yours or that there is a great deal more work which could be done by that department?—The Agricultural Department has not been doing anything for us at all. It is not doing anything for the co-operative movement.

16309. From the reply which I heard you give to the Chairman, I thought you said that the Agricultural Department and the Co-operative Department were working closely together and that you expressed the view that more might be done by the Agricultural Department for the co-operative movement. Is that not the view which you expressed?—We should like them to work more fully together than they are doing at present.

16310. My point is this: Do you think that the resources of the Agricultural Department at present are being fully utilised by the co-operative movement, or do you feel that if the Agricultural Department was strengthened there is much work which might be undertaken by them in aiding the co-operative movement?—We think the Agricultural Department is doing

much particularly for the small ryots who would probably reap the biggest benefit from improved agricultural methods.

16311. May I put it this way. Are you entirely satisfied with what the Agricultural Department is doing for you at the present time?—I think that is the question which the Chairman put earlier.

The Chairman : I think the question I put to the witness was whether the Agricultural Department is making full use of the co-operative movement for the purpose of propaganda and demonstration and I might have included the distribution of seeds also.

16312. *Sir Thomas Middleton :* Your reply then was that you thought it might make more use of the co-operative movement?—We think it might.

16313. Do you take the view that the co-operative movement in the near future might make much more extensive demands on the Agricultural Department? Will it be in a position to do so?—Yes, I think so.

16314. What I am trying to get at is whether there is sufficient strength in the Agricultural Department as at present constituted, to meet the demands which are likely to arise from the extension of the co-operative movement?—It is the smallness of the agricultural staff which we want to make up by co-operative organisation.

16315. These farming societies, for example, are they not worked with the assistance of the agricultural staff?—The Agricultural Demonstrators go there occasionally and give technical advice.

16316. Could you extend that type of society much further with the existing resources of the Agricultural Department?—There is no reason why we should not have one of those societies at every union headquarters.

16317. You think there will be no difficulty in getting all the advice required from the existing department?—I think the existing department ought to be able to provide the necessary advice; but the existing staff would not be able to spend so long a time with each society as it does now at Lalgudi.

16318. You told us that whereas your rates of interest are 9 per cent. for advances, those of the *sowcar* are usually 12 per cent. Is that for precisely the same type of risk?—Yes.

16319. There is a 3 per cent. difference. Have you found that in competition with your societies, the *sowcar* has in any case reduced the rates?—I cannot from my own personal knowledge quote any definite example. There are cases in which the moneylenders have reduced the rates of interest. In certain villages they have done that. The rate of interest charged by private moneylenders is indirectly affected.

16320. What I want to get at is whether as a result of the expansion of the co-operative movement in competition with the *sowcar,* it has become effective in reducing the rates?—Yes, in certain areas.

16321. You mentioned that the Imperial Bank had granted credit to the co-operative movement. Can you tell me whether this bank or any other bank has in any other way assisted the agricultural interests by advances?—No, I do not know of any other way.

16322. Except through the co-operative movement?—Yes, but in certain areas I know certain moneylenders borrowed from the Imperial Bank and lent money to the ryots.

16323. So that we have in the Presidency four agencies for advancing money to the ryots, the *sowcar,* the co-operative credit societies, *taccavi* advances and the banks?—Banks working through other agencies.

16324. Therefore, you reduce the number of agencies to three?—I think there are only three.

16325. In connection with fragmentation of holdings, some years ago your department prepared a leaflet for distribution, urging the advantages of consolidation upon the villagers. Was that leaflet extensively distributed? I think it was three or four years ago?—Yes, in 1920.

16326. Can you trace any result of the effect of that propaganda?—None.

16327. You are not able to trace any?—I should say that every time I raised the question, the result was found to be the same. I was told that there was nothing which could be done in the matter.

16328. I ask, because it seems to me that this leaflet was very well adapted for the purpose for which it was intended, and if it failed, I do not see how propaganda is going to help you much?—The ryots do not think about it because they themselves do not feel the need.

16329. That was the point to which the leaflet was addressed; to show the necessity for consolidation?—The necessity was explained to them but they did not quite see it in the same light.

16330. Now in connection with the figures on page 610 of your memorandum, I suggest that they are probably related to the financial resources of the agriculturists in the particular season. They apply to the whole Presidency. Conditions vary in every district and if you wanted to explain these, apparently anomalous, figures it might be possible for you with the assistance of the Agricultural Department to analyse further. I think in that case you will find that some interesting information will be forthcoming?—I am rather inclined to think that the personal element will probably enter into it a good deal. In certain areas you have a man who is very keen and persuades people to try them. In another area you do not have the same man.

16331. There is a great falling-off in the amount spent on feeding stuffs from one lakh to Rs. 48,000, assuming the other conditions are the same?—That would be one factor.

16332. You say that you have more money available for short-term loans than is being taken up. Do you think it is possible under your rules to reduce the rates?—I do not think that makes any difference.

16333. Surely it is an ordinary financial expedient to lower the rate of interest if money is abundant?—Yes. But there are other causes which are in the way; he cannot take all the short-term money from the society.

16334. But although a ryot is unwilling to borrow at 9 per cent. he may be willing to borrow at 7 per cent.?—But he cannot use it for long-term purposes and he is prevented from taking money for short-term purposes.

16335. That is your explanation?—Yes.

16336. *Dr. Hyder:* I find from this report of your department that your movement covers about 1·63 per cent. of the population of this Presidency?—I do not think that it is quite correct. That will be the number of members, but each man has a family and you will have to multiply that by about 5 to get the population.

16337. Say, 7 per cent. then?—Yes.

16338. I find from the figures that half the membership comes from the rural area. Is not that so?—It may be.

16339. The point I wish to make is this: that the agriculturists form about 70 per cent. of the population, so that there is plenty of room for your department?—Ample room.

16340. With regard to collection, I suppose it varies in different areas both in principal and interest and you have got some very bad areas, and you get some quite good; the collection varies from 100 per cent. to 30 per cent. With regard to this question of the rates, I find from your report, page 28, that there was a rise in non-members' deposits and a fall in the members' deposits. I ask you to consider the circumstances of your Presidency. You know that the Imperial Bank of India has lowered its rates to 3 or 3½ per cent., has it not, and you have got in 1924, a rate of about 4½ per cent. on fixed deposits?—Yes.

16341. Do you not think that these people who read newspapers, and are very acute will draw their deposits from the Imperial Bank, and put them into your banks, because you pay a much higher rate of interest?—That may be so.

16342. With regard to your own members, you say there has been a fall in the members' deposits. They have taken money from your bank, and lent it directly to other people?—That may be so to some extent, or they may have drawn it out and spent it themselves.

16343. I do not know whether I should saddle you with the explanation given by another man. The report goes on to say that the depositors prefer to withdraw the money and lend it on mortgage security?—I see. I am afraid I have not noticed that.

16344. On a point of general principle, I think that, if you were to reduce your rate or vary your rates according to the money market, you would be doing good business?—We try to run them on business principles as much as possible; but I do not think varying the lending rate would seriously affect the number of loans we give. But our borrowing rate materially affects our deposits.

16345. But take this recent case. I know that the people here, especially in Madras, know what the rate of the Imperial Bank of India is. They know what rates you give them and they say "this is a good business, I would make an additional four per cent. out of that"?—We fix our borrowing rates according to our cash requirements. It also depends upon the market rates. The Central Banks offer as far as possible what the other banks do or a slightly higher rate.

16346. *The Chairman :* And your alterations probably lag somewhat behind the change?—Yes probably.

16347. *Dr. Hyder :* I ask you to look at page 56 of the Administration Report* of your department where you slassify loans according to the purpose, value, security and the period. For what purpose is this, for payment of *kist*? Would that include Government land revenue and rent to the landlord? It is a sorry state of affairs if they cannot pay land revenue. Would you include that among the productive purposes?—It is like this: Government *kist* has to be paid at the harvest, when the food grains are sold at the minimum price; and if he has got to sell his grain to pay his *kist*, he loses a good deal.

16348. That is the explanation of it?—Yes.

16349. He does not sell his produce, but holds it?—That is what we want him to do, to hold his produce and take the price when it goes up.

16350. Looking a little lower down, there is an item for paying off prior debts to the amount of Rs. 46 lakhs and if you look at the non-agricultural societies, there is an item of Rs. 32 lakhs. So you are doing some long-term business, are you not? And you are not quite sure in your mind whether you are going to classify this as productive or unproductive? Your department could not make up its mind?—It is separately classified; it is not a question of not being able to make up our mind; it is always classified in that way. You could not put it either into productive or non-productive.

16351. What is this Rs. 32 lakhs for? For payment of prior debts of non-agricultural societies?—Town societies or urban societies.

16352. So your department is going to pay off the debts of shopkeepers and such like people?—Why not?

16353. I thought the whole purpose of your department was to create new societies and not take over old debts and so on, especially on the non-agricultural side?—We have urban societies which deal with the non-agricultural population in towns on exactly the same lines as the agricultural societies in the villages.

16354. Please look at this other item on page 57. You classify the loans there and what I want to know is this: The first classification obviously refers to loans not exceeding Rs. 50; the second and third refer also to small debts and the fourth to loans exceeding Rs. 250 and the amount is Rs. 56 lakhs. Do you refer to the small man or the large man when you speak of the

* Annual Report on the working of the Co-operative Societies for the year 1924-25.

agricultural man with a loan over Rs. 250?—It would naturally apply to the moderately prosperous ryots in the rural areas.

16355. Do you not think it is better to split it up a little just for the purpose of comparison and go right up to Rs. 1,000? You know very well that a man who takes a loan of Rs. 1,000 does not belong to the economically disabled class of the ryot?—It depends.

16356. People who need Rs. 50, Rs. 100 or Rs. 200 are obviously the small people for whom you are catering and who should properly come under your care?—We do not confine our attention to the people who are entirely bankrupts.

16357. *Dewan Bahadur Raghavayya*:Pursuing this question of the rate of interest which the primary societies charge on short-term and long-term loans, I do not quite see the difficulty in reducing that rate in response to a reduction which will be effected in the rate of interest to be paid by the depositors. I understand that Central Banks alter the rate of interest on deposits with reference to the rate of interest prevailing in the market?—We do not think that any small reduction in the rate of interest to the primary societies and to the members of the primary societies would make any material difference in the amount taken, and if we reduce our rates we should be reducing our margin of profits without, to any great extent, increasing the transactions to make up the difference.

16358. What is the difference between the rate of interest at which the Central Banks lend and the rate at which primary societies lend to invididual members?—The primary societies borrow at 8 per cent. and lend at 9⅜ per cent.

16359. What is the rate at which the Central Banks borrow from the depositors?—4 to 6 per cent.

16360. Why should there be such a big difference between the rate at which the Central Banks borrow and the rate at which they lend money to the primary societies?—The Central Banks borrow at 4 to 6 per cent. and lend at 8 per cent.

16361. Surely the Central Banks do not want to profit?—There is another factor; the Central Banks also borrow from the apex bank at 7 per cent.

16362. And at what rate does the apex bank borrow from the public?—At 4 to 6 per cent.

16363. Sometimes at 5 per cent?—Sometimes it is as much as 6½ per cent.

16364. My point is this: if you are in a position to reduce the rate at which primary societies lend to their members, it might be possible to obviate the necessity for advancing on a large scale *taccavi* loans. No doubt the ryot wants loans on long-terms. But if you are ready to advance loans for periods extending up to 5 years and occasionally up to 7 years, a great deal of land improvement could be effected and the loan could be repaid easily in 5 or 7 annual instalments. Unless the improvement is very costly, it is possible for the borrower to repay the money within 5 or 7 years. In that case, the borrower would prefer to join a co-operative society and borrow from it rather than borrow from the Government in view of the difficulties which are said to exist in his getting money from the Government under the *taccavi* loan system?—Yes.

16365. It seems to me therefore that there is a distinct advantage in your attempting to reduce the rate at which the primary societies lend to the individual borrower if it is possible to do so?—I do not know what the present rate of *taccavi* is.

16366. It is 7½ per cent.?—Then we should have to reduce our rate by 2 per cent. to bring it down to its level and co-operative societies cannot lend for this period for which Government can give *taccavi* loans.

16367. Even if you reduce it to 8 per cent., the difference would be considerably reduced and people would be inclined to resort to co-operative societies much more freely than they do at present in view of the small

difference in the two rates of interest?—The bulk of the money comes from the Madras Urban Bank, and they lend at 7 per cent.

16368. Why should Central Banks borrow at 7 per cent.? All along the line you could reduce the rate of interest; that is what strikes me?—The apex bank does not borrow at 7 per cent.; it lends at 6 per cent.

16369. Why should it not lend at a lower rate of interest?—It is doubtful whether it can at present afford to reduce its rate.

16370. I think that is a matter which requires investigation?—We have had a good deal of correspondence on the subject, and we have come to the decision that the rate should not be reduced at present.

16371. Was that correspondence recent? Did it take place quite recently? I find the rate of interest has been going down steadily for the past two years?—The question was discussed by the representatives of the bank at a meeting held three months ago.

16372. In regard to land mortgage banks, the land is the ultimate security for the debentures; is it not?—Yes.

16373. It is a society of borrowers, a few borrowers join together and form a co-operative society. Each man when he wants to borrow money becomes a member, subscribes a share capital, and applies for a loan. Debentures are then floated and issued to the extent of the loan that is required. The land is the ultimate security. I do not therefore understand why the share capital should be as high as 10 per cent. of the amount of the loan applied for?—That is the rate at present; it is proposed to reduce it.

16374. And I also find that the maximum period of repayment is 20 years and the rate of interest at which loans are issued to borrowers is 8 per cent.? —8 to 9 per cent.

16375. Does it not make the annual repayment in instalments very heavy? If we calculate the annual repayment instalment for a loan repayable in 20 years and carrying interest at 8 per cent., it would be something like 10 per cent. of the amount borrowed?—This loan is greater at 9 per cent.; the annual repayment comes to about 11 per cent.

16376. Do you think a borrower from a land mortgage bank, who mortgages in most cases the whole of his landed property and borrows up to 50 to 60 per cent. of the value, would be in a position to repay as much as 11 per cent. of the money which he borrows from the bank without being put to the necessity of fresh borrowing? Would he be able to take enough from his land to pay as much as 11 per cent. of the principal towards the liquidation of his debt?—That amounts to 5 per cent. of the presumed value of the land. The reports rather seem to indicate that it could be done. I agree that it is not easy but unless he can do it on the present rates of interest we cannot help him.

16377. You were saying that the repayment of instalments amounts to about 5 per cent. of the value of the land under the land mortgage bank system; what do you think, is the average outturn which an average ryot gets out of the land which he owns and which he himself cultivates?—I believe it varies tremendously; the best information on that subject can be had from the Settlement Reports.

16378. We have to take into account the land which is cultivated by the owner himself, and that which is cultivated by the tenants under him: do you not think that 5 per cent., or a little over 5 per cent. of the value of the land represents a very large share of the income from the land?—It does, but he is better off paying 5 per cent. to a co-operative society than paying 10 per cent. to a *sowcar*.

16379. That is so, but what happens in the case of the *sowcar* is that he does not pay anything until the debt increases to the extent when the debtor is compelled to part with the land. Do you not think that it would be a distinct advantage to spread this repayment over a longer period, say, 40 years or 50 years?—I do not think so; for this reason, that at 9 per cent. the amount he has to repay only for 20 years is about 11 per cent. and we have fixed

the 7 per cent. debentures on the strong advice of Sir Norman Murray, the then Secretary of the Imperial Bank here. We do not see how we can lend at 9 per cent. and extend the period of repayment beyond 20 years when we borrow at 7 per cent. If that 9 per cent. is fixed, it means that the man who has to repay in 20 years must pay about 11 per cent. a year. If we extend it beyond 20 years, the amount of advantage the ryot gets becomes less and less, because the amount he must pay annually however long the period is extended cannot be less than 9 per cent.

16380. Let us take the period as 40 years. Assuming that the rate of interest is going to be 9 per cent., if the repayment is spread over 40 years, do you mean to say that the immediate advantage to the ryot by way of the proportion of the income which he has to pay will not be great?—No, it would be very small, because his present annual repayment at 9 per cent. is just over 11 per cent., and even if you take it up to 100 years, you will only bring it down to 9 per cent.

16381. You have consulted the tables?—Yes, I think it obviously is so. The annual repayment falls very considerably at first over a period of years, but after 20 years the fall is very slight; it falls from 11 per cent. and a bit to 9 per cent. and a little over for 100 years. You then greatly extend the loan and consequently increase the risks of recovery without any advantage to the ryot.

16382. I do not think there is much risk in recovery because the land is the security and it is the first charge on the land barring the land revenue?—Quite so, but in a general way, the longer you extend the loan, most people would agree, the more the risk of recovery becomes. If any legal action has to be taken there will be far greater difficulty in regard to coparceners after a long period of years.

16383. I do not see why it can be so, if you make the land a security; the financing of the land mortgage banks is independent of the general financing of the general co-operative movement; is it not?—Yes.

16384. You finance your land mortgage bank by the issue of debentures, and you are now issuing those debentures at 7 per cent. interest?—Yes.

16385. You decided upon 7 per cent. sometime ago when the rate of interest in the open market was high?—Yes.

16386. Now there is a steady reduction in the rate of interest; do you think it would be possible to reduce it to, say, 6 per cent? You can get enough money if you offer 5 per cent?—I do not think we could float very many debentures at a lower rate of interest. I think the Mysore Government rate stands somewhere about 7 per cent.

16387. For the Mysore Government loans?—Is not that so?

16388. It was 7 per cent. sometime ago?—It is a little below 7 per cent. The advice that we got from the banks was that we could not raise very much money on debentures if we floated them at a lower rate; the rate has fallen slightly in the meantime, and we might possibly do something at 6½ per cent.

16389. It has fallen considerably; the Government of India were offering 6 per cent. in those days, but now they do not offer more than 4 per cent?—I think their paper is standing at roughly 5 per cent.

16390. If it is possible to reduce the rate of interest, do you think it would be a distinct advantage to extend the period of repayment?—If you reduce the rate of interest, I think the advantage of extending it to 30 years would be a little more than it is at present; I have not worked it out on paper, but I think it is correct.

16391. My point is that by reducing the equated annual payment of the borrower, you improve the chances of his repaying easily and also quite regularly?—Yes.

16392. In regard to ascertaining the real debts of the cultivator, we now have the figures of the Registration Department in regard to sales and mortgages of real property exceeding Rs. 100 in value, and we have also the Settlement Reports of districts which we recently resettled, and in regard to which

economic enquiries respecting a few typical villages have been made, and actual details of the indebtedness ascertained. Beyond that, we have no data at present to ascertain the exact indebtedness of the rural population?—There are one or two other sources, I believe, from which information may be got; I doubt whether you can get it now. The income-tax figures, which are no longer available to us, would have shown a great deal about the loans of *sowcars* to the ryots.

16393. They are now confidential?—They are now confidential, and we have no access to them in the way we used to have.

16394. With regard to the interpretation of the sentence occurring on page 625 of the Joint Registrar's memorandum, "It is only when a solution is found to obtain money to pay off his prior debts, he will be free to borrow from his society for all his short-term needs"; I take it that what the Joint Registrar means is that so long as the ryot is in the clutches of the money-lender or *sowcar* and does not liquidate his debt, he will have to have recourse to him for his short-term loans also?—Yes, to some extent in regard to short-term loans.

16395. Then I do not see the force of your contention that you have not been able to advance all the money which you now have in your banks towards short-term loans?—What I mean is that there are certain creditors who allow him to borrow from the societies, but there are others who do not; in the case of those who do not he is not able to borrow from societies; that is what I mean.

16396. With regard to the influence of economic conditions of a district on the efficiency of the societies, my impression of societies working in various areas was that the co-operative movement was established in the poorer districts more firmly than in the more prosperous districts; I have in mind the district of Anantapur where, I think, the co-operative movement first took root?—Is it not a dry district?

16397. It is a very dry district, one of the driest districts in the Presidency, but Chingleput is not, although it is a non-delta area. Am I right?—It is true they have been established there, but so much depends on the personality of the man who is driving it. A very great deal of work was done there by the leadership of capable men who took a very keen interest in the matter.

16398. In regard to Fragmentation, you say on page 616, "Fragmentation has not gone to the fantastic lengths reached in certain villages in the Punjab. There are, so far as has been discovered, no cases of fragmentation resulting in plots of land so small or mis-shapen as to be uncultivable." Have you, Mr. Hood, made any personal investigation into this question of fragmentation in any district in which you happened to serve?—I made some enquiries in Tanjore district about it, and I got the village officers to prepare maps of half a dozen villages showing exactly what the extent of fragmentation was. I have not got a list of the individual ryot's holdings, but I have got maps showing the holdings according to the *pattas*.

16399. And it is on the strength of that survey that you have made this statement?—Yes.

16400. *Professor Gangulee:* I should like to know from you the points of contact of your department with other departments. You have explained already your relationship with the Department of Agriculture; now you mention in your précis something about joint farming societies; do you receive any assistance from the Department of Agriculture?—Yes.

16401. You sought their assistance and advice?—Yes, undoubtedly; they have given a great deal of assistance and advice.

16402. You have cattle insurance societies?—We have 3 societies registered.

16403. In that connection, did you seek the assistance of the Veterinary Department?—I think so; I certainly consulted the Veterinary Department a great deal about 3 years ago, when this question was under examination.

16404. In starting your non-credit societies, such as for purchase of implements and manures, do you ask the Director of Agriculture to give advice on

certain points?—Yes; the Shiyali Agricultural and Industrial Society made their manure according to the *recipe* of the Agricultural Department, and on their advice.

16405. Their *recipe* depended on the recommendations of the Agricultural Department?—Yes, with regard to the ingredients required, the proportions and all the rest of it.

16406. Is there any special procedure for dealing with loan applications of an urgent character?—Not that I know of; I suppose they mark it 'Urgent,' that is all.

16407. Supposing a tenant wants a loan for manure urgently, instead of going through the whole procedure which you described, is there any special procedure for dealing with loan applications of that character?—Some societies have the system of cash credits, and some societies have the system of giving loans on a bond executed at once which they can recover by instalments.

16408. Is any portion of the profits that you get from a co-operative society allotted to educational purposes or sanitation?—They make a contribution to what is called the Common Good Fund.

16409. Is that a definite provision in the Act?—It is a definite provision in the by-laws.

16410. *Sir Thomas Middleton:* To refer again to the question which we discussed, did you express the view that the demand for loans would not be much affected by a slight reduction of one or two per cent. in the rate?—That is my impression of the situation.

16411. I want you to look at it from another point of view. I am chiefly concerned with the provision of cheap credit for sound agricultural business, and the Rao Sahib told us that your rates were coming into competition with the *sowcar's* rates. As you lower your rates the *sowcar* also in competition with you lowers his rates?—Yes.

16412. I ask you if it is not an important thing that you should aim at securing the lowest rate which is consistent with sound financial business in view of the effect that your rates might have on the general rates of interest charged?—I think we are trying generally to work on that principle.

16413. But I think the point arose because you said that you had money which was available but which was not taken up, and we asked you why you did not lower the rate?—I pointed out that I did not think a slight reduction would result in the whole lot being immediately taken up.

16414. If money were cheaper, would it not be more readily borrowed?—Possibly, not always; it is not necessarily so.

16415. Is it not the usual experience?—I do not think that is the fact which prevents it from being taken up. If that is not the factor that prevents it from being taken up, I think it follows that a slight reduction would not result in its being taken up.

16416. *The Chairman:* One or two more questions. Which would you prefer in the case of these mortgage banks, that Government should subscribe half the capital or that Government should guarantee interest on the debentures?—It is a question that we have not very seriously considered or discussed because the Government refuse to give the guarantee.

16417. But they are in fact giving capital at the rate of fifty-fifty?—They have promised to do it only for four mortgage banks in the initial stage, and they have guaranteed fifty-fifty up to Rs. 2 lakhs, *i.e.*, Rs. 50,000 for each bank.

16418. Which method do you prefer?—I do not like to give an expression of opinion off-hand.

16419. Have you succeeded in redeeming the past debt of any individual cultivators to any important extent by the co-operative movement?—We have no statistics on the subject, but I can only say that there are instances in which it has been done.

16420. *Dewan Bahadur Raghavayya:* Formerly it was Rs. 3½ crores?—We have cleared Rs. 3½ crores of prior debt, but we do not know whether we have cleared off the whole debt of any one individual.

16421. *The Chairman:* I was going to ask you whether you have had any indication so far as to whether the individuals who have had their prior debt so redeemed, have tended to borrow again and come into the same difficulty, or whether their lesson has had any effect on their practice?—I personally had no occasion to gather any definite information on it.

16422. It is a very important point, is it not?—It is a very important point.

16423. You have mentioned in the course of your evidence in answer to a question put by myself that you thought that the Agricultural Department might do more for you as a Co-operative Department; is that so?—I think we both together might do more for the ryot.

16424. You do not feel that the Agricultural Department could do more than it is doing, to advance the cause of co-operation among the ryots?—I do not think that is their function.

16425. A word or two about these banks. In Mr. Gray's interesting memorandum, the history of these banks is very plainly and clearly set out. It began in 1906 with the Madras Central Urban Bank after which the bank at Salem, the bank at Trichinopoly and the banks at Coimbatore and Tenali in the Guntur district were formed. He sums up on page 3 by saying: "During the second six years of the movement nine banks of this mixed type were started." The words 'mixed type,' I take it, refer to the admission into the shareholders' list of societies as such. Is that the position?—Yes.

16426. When he describes the management of these banks, he says their constitution became of a 'mixed type.' What was the management after the societies as such were admitted as shareholders?—The management was by a Board of Directors who were elected partly from the society shareholders and partly by the individual shareholders.

16427. Are they elected by societies sitting in general meeting so far as the societies' representation goes, or how?—They are elected at a general body meeting of the bank itself. The general body consists of individual shareholders and representatives of the societies which hold shares. In some banks, however, these societies elect their own Directors independently.

16428. So that, some Directors represent the societies, while others represent the individual shareholders. Is that the position?—Yes.

16429. Is that not the position in all banks? Is it a fact that in some cases societies have representatives, or nominal representatives, who are in fact elected at the same meeting and by the same body of electors as the Directors representing the shareholders?—That is the case in a few of the Central Banks.

16430. Could you let us have those facts definitely? If you say you are sure now, we will accept it. Otherwise it is important that we should have the precise position in regard to this matter?—I cannot give you the number of banks, but it is the case in some of the banks.

16431. It follows very closely my colleague the Dewan Bahadur's point as to the sympathy or lack of sympathy between the direction of the banks and the welfare of the primary societies?—It obtains only in a very few of them.

16432. What is the main objective of those who are managing the banks? Is it to provide the money as cheaply as possible through the primary societies to borrowers, or to make a financial success of these banks?—So far as the society members are concerned, their object is to obtain the money as cheaply as possible for the ryots. There is in general a steady demand from societies for reduction of rate of interest. At the same time they are interested in seeing that their bank is run on sound banking lines. Individual members are mainly interested in seeing that the bank is able to pay 9 per cent. and consequently do not always see eye to eye with societies. There are cases where there has been a distinct divergence between the two.

16433. Would you agree that in cases where a balance sheet is presented by presumably skilled accountants to an audience of those who are not accustomed to banking, it is probable that the Directors of the bank will have no difficulty in defending their policy? Do you believe that or not?—I think that is generally correct.

16434. How long are these balance sheets in the hands of shareholders who are individuals or societies, before the annual general meeting? Is there any statutory period?—There is no statutory period.

16435. Have you any experience, either of you, as to how long these balance sheets are in the hands of the public?—It is about a month.

16436. That is the universal practice?—Yes, mostly so. It must be about that, because it is only after they get their balance sheets that they can call a general meeting.

16437. How far are you, as Registrar and Joint Registrar of Co-operative Societies in the Presidency, responsible for the policy of these nine banks?—It is our business to see that they are run on co-operative lines.

16438. And what is the test of their running on co-operative lines? Is it that they should provide their money as cheaply as possible to primary societies for lending out to members or to individual shareholders?—Subject to financial stability.

16439. Is that the object? Is it your responsibility to see that that obligation is carried out?—We regard that as our duty.

16440. That is your duty?—We have got no financial responsibility in the matter ourselves.

16441. It is your duty to see that it is done, but you have no financial responsibility in the matter?—Yes.

16442. I am afraid I cannot reconcile the two statements. What technical advice have you at your disposal to assess the workings of these banks with a view to discovering whether in fact credit is being provided as cheaply as may be compatible with financial stability?—For technical advice on banking matters, we go to the Imperial Bank.

16443. You go to the Imperial Bank?—Yes. There is always a fair amount of consultation between the Registrar and the local Secretary of the Imperial Bank.

16444. To some extent the Imperial Bank is in competition with these banks?—I do not think so to any material extent.

16445. Have you ever invited the expert or experts in the Imperial Bank who are at your disposal to examine the balance sheets and the books of these nine banks with a view to advising you as to whether credit is being provided as cheaply as may be compatible with financial stability?—They were invited to conferences in which financial questions were decided, regarding fluctuations, etc., and the Secretary to the Imperial Bank attended them.

16446. So that the answer to my question is 'no'?—Yes.

16447. Now then, a word or two on the management of land mortgage banks. What is the constitution of their managing body?—The shareholders elect the members to the board of management from among themselves.

16448. What machinery is there to ensure that the land mortgage banks are to be managed in such a way as to provide credit to the cultivator at the lowest possible rate of interest consistent with sound finance?—The Registrar sees that the rate of interest provided is reasonable.

16449. So that we are back to the Registrar of Co-operative Societies?—Yes.

16450. Mr. Hood, is it part of your responsibility to see that the land mortgage banks so manage their affairs as to provide credit to the intermediate organisations and to the cultivator at the lowest rate of interest consistent with sound business management?—Yes. I think the general responsibility is mine.

16451. You think the general responsibility is yours?—Yes.

16452. Now on this question of the departmental responsibility, I want to know what steps your department has taken to examine the books and balance sheets of these mortgage banks to ensure that they in their turn are providing the service of credit at the lowest possible rate?—There are only two rates involved. The banks lend direct to the ryots and the only question is at what rate we can get money and what margin we have got to follow for the success of the concern.

16453. The bank is paying at what rate?—7 per cent.

16454. For the money that it borrows?—Yes.

16455. And is lending at?—9 per cent.

16456. So the issue is whether the two per cent. covers working charges or does not?—Yes. The question was examined quite recently and discussed, and discussed at great length three years ago, and the conclusion then arrived at was that they could safely depend on a smaller margin. That was settled at a conference between the Minister in charge, the Secretary in the department, the Secretary of the bank, Sir Norman Murray, and myself.

16457. And you are bound to continue of course to borrow at 7 per cent?—At present, yes.

16458. Have you any hope of borrowing cheaper?—I think so; it depends on the success of the banks. If they are successful, I think we should certainly get it cheaper.

16459. How is the market being tested to ascertain whether in fact the public would lend more cheaply than at 7 per cent?—We can only test that in a satisfactory manner by putting debentures on the market.

16460. At 6½ per cent?—Yes.

16461. Have you tried it?—No.

16462. So you could not judge from that?—Quite so.

16463. What is the Government getting for their share of the capital? The same rate of interest?—No; 6½ per cent.

16464. So it is not quite the difference between 7 and 9?—No; but the calculation was originally made on that difference. When we made the calculations, we did not reckon on having the money at 6½ per cent.

16465. Would you agree that if this decision was taken three years ago, the time has approached when you might re-investigate the whole position with a view to making every attempt to get at least 6½ per cent. as the rate of interest at which these land mortgage banks give loans?—In other words we are to work the bank with a less margin than 2 per cent?

16466. Yes. Will it be worth while to enquire into it again?—No. I do not think it would at present, because the transactions are on too small a scale, in so far that the two per cent. at present is not providing for such staff as we should like the banks to have.

16467. I think we have the figures of the volume of business done by these land mortgage banks, have we not?—Yes.

16468. It is a fact, is it not, that all these banks are in difficulty as regards putting their debentures on the market at 7 per cent?—Only two of them are actively working at the moment.

16469. Are the others trying?—To a certain extent I think. Kallakurichi is trying and is not very successful. I do not think Tanjore is trying very hard at the moment.

16470. Let us take the two that are trying. They have got business pending which they could do if they could get the money?—I do not quite know; I do not know to what extent they have got applications for loans from the ryots.

16471. You said during the course of your evidence that these loans were being made on the security of individual mortgagees?—Yes.

16472. So that such mortgages are pending?—Yes, they are pending, but they are under investigation. Before they can float them, they have got to satisfy themselves that the mortgages and the land are all they are represented to be.

16473. Precisely, but how can you say that the public is not coming forward at 7 per cent. if you are not asking the public to come forward on any particular group of mortgages?—In one society they are trying to sell their debentures; they have got definite demands which have been investigated and they are not selling them.

16474. What society is that?—Kallakurichi.

16475. And that is an active society?—It is dying now; no debentures have been floated; it is not able to sell debentures.

16476. That is not one of the two that are at work at the moment?—Yes.

16477. What I am trying to get at is whether in the case of these two banks the names of which are known to the public and which are in fact at work, there have been instances of the arrangements for a mortgage loan having been fixed up until the point came to get the money and that then the public has declined to lend at 7 per cent?—I gather that they have got no applications for debentures pending; as far as I know they have not; I think that is correct.

16478. Is your department in close touch with these land mortgage banks?—Yes.

16479. How often do they report their business to you?—There is no regular report, but the Deputy Registrar gets into touch with these societies; being new, he visits them every two months.

16480. The land mortgage banks?—Yes, those two banks.

16481. Have they been visited during the last two months?—Yes.

16482. Did you visit them yourself?—No, not these banks.

16483. Was it you or your predecessor who paid this recent visit?—I have not been to see them; it was the Deputy Registrar.

16484. Do you think it might be well if representatives of the co-operative movement from all Presidencies and Provinces met in conference once a year or once in two years to discuss questions of general interest and questions of principle?—I think, on the whole, it would be an advantage.

16485. Do you not think that other Presidencies and Provinces might benefit from your experience?—Yes, I think they might.

16486. From your failures as well as your successes?—Undoubtedly; the failures are of course most important.

16487. Is it within your knowledge that there was such a meeting called in Bombay in 1926; I am not sure whether it was official or un-official?—The Registrars and also representatives of the Provincial Banks met there.

16488. From this Presidency?—Yes.

16489. What was the outcome? What was their view as the result of their attendance at that conference: that it was useful?—It is useful.

(The witnesses withdrew.)

APPENDIX I.

Number of societies in proportion to the population.

The following statements show the number of societies—credit societies—in proportion to population, etc.:—

1. Total population 42,800,000
   Primary credit societies 10,900
   Proportion—One society to 4,000 of population.

2. *Urban* (in towns over 10,000 population. Generally there are no urban societies in smaller townships).

Township.	Population.	Houses.	Societies.	Members.	Proportion of col. 5 to col. 3.
1	2	3	4	5	6
163	4,200,000	780,000	845	151,000	1 to 5

This is only approximately accurate as it has been assumed that credit limited liability societies—non-agricultural—are all in urban areas of over 10,000 population. A very few are in smaller places and there are a few unlimited liability societies in urban areas.

3. *Rural (in all places under 10,000).*

Villages.	Houses.	Population.	Societies.	Members.	Proportion of	
					Column 4 to 1.	Column 5 to 2.
1	2	3	4	5	6	7
52,862	7,718,000	38,590,000	10,000	543,000	1:5·3	1:14

4. *Agricultural.*

——	Non-cultivating landholders.	Cultivating landholders.	Tenants.	Labourers.
Population . . .	2,622,500	11,960,000	7,229,000	8,251,000
Houses	524,500	2,392,000	1,445,800	1,650,200
Members . . .	38,800	280,000	55,000	33,500
Proportion—Members to houses .	1 to 13·5	1 to 8	1 to 26	1 to 49

Tenants include tenants holding under ryots in ryotwari tracts and also under zamindari areas. There are in general fewer societies in zamindari areas than in ryotwari areas.

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APPENDIX II.

Statement showing amounts of loans given by agricultural societies for productive purposes and paying off prior debts.

Year.	Cultivation.	Purchase of cattle.	Payment of kist.	Improvement of land.	Purchase of raw materials for industries.	Trade.	Education.	House building.	Manufacture and purchase of country carts.	Purchase of land.	Food and necessaries of life.	Total.	Paying off prior debts.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1904-05	225	665	510	65	160	508	..	50	...	...	1,340	3,503	250
1905-06	7,765	5,877	13,998	655	445	6,011	...	2,400	...	400	3,115	40,666	7,636
1906-07	28,721	23,597	32,820	11,680	1,478	22,760	...	10,386	..	3,034	6,134	1,40 610	53,317
1907-08	44,606	36,994	35,466	19,534	1,800	43,998	...	11,286	...	3,402	12,012	2,09,098	1,04,500
1908-09	78,766	73,614	47,381	38,294	1,805	1,04,347	...	25,183	...	23,457	33,173	4,26,020	2,57,919
1909-10	1,11,262	1,72,340	60,527	60,795	6,566	1,34,208	...	52,818	..	49,375	59,041	7,06,932	5,18,221
1910-11	1,07,616	2,22,910	77,453	54,555	7,248	1,55,165	...	81,874	...	59,072	74,596	8,40,489	7,27,417
1911-12	1,58,398	2,94,958	72,337	80,805	20,552	2,12,592	..	1,05,049	...	97,209	1,19,616	11,61,511	10,88,903
1912-13	1,86,921	3,02,797	73,528	78,267	11,435	2,74,823	1,629	1,07,346	13,946	1,12,343	1,28,568	12,91,603	9,51,128
1913-14	1,66,081	3,03,389	86,503	91,949	16,100	3,58,850	4,773	1,30,638	11,287	1,16,879	1,21,499	14,07,948	11,56,712
1914-15	1,93.908	2,72,361	1,06,086	1,00,806	9,025	4,25,952 (Trade and Education together)		1,33,232 (House building and Manufacture together)		1,17,248	1,45,767	15,04,385	10,74,480

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Statement showing amounts of loans given by agricultural societies for productive purposes and paying off prior debts.—contd.

Year.	Cultivation.	Purchase of cattle.	Payment of kist.	Improvement of land.	Purchase of raw materials for industries.	Trade.	Education.	House building	Manufacture and purchase of country carts.	Purchase of land.	Food and necessaries of life.	Total.	Paying off prior debts.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1915-16 .	2,84,113	2,77,307	1,90,749	1,13,402	46,758	5,09,940		1,74,106		1,65,799	1,46,700	19,07,974	13,93,511
1916-17 .	4,33,317	3,08,207	4,06,241	1,50,059	17,307	6,94,891		2,20,358		1,87,751	1,81,697	25,99,828	18,55,178
1917-18 .	5,47,784	3,47,213	4,11,418	1,66,891	26,964	8,09,834		2,43,447		1,77,971	2,45,510	29,77,032	18,86,777
1918-19 .	8,20,392	4,94,513	5,81,667	2,57,981	42,253	8,51,325		3,08,744		2,40,597	5,12,761	41,10,233	24,36,301
1919-20 .	12,63 962	8,09,265	6,89,512	3,11,559	59,518	12,68,828		3,64,487		3,22,575	8,44,995	59,34,701	27,59,263
1920-21 .	16,21,149	8,26,297	6,94,452	2,53,220	66,880	11,42,910		4,05,319		2,91,137	10,21,171	63,22,535	23,15,841
1921-22 .	18,07,665	11,96,072	6,65,234	4,77,355	82,826	14,60,647		5,31,421		4,70,828	11,04,907	77,96,955	36,79,523
1922-23 .	22,74,321	10,83,819	7,99,484	4,90,626	99,346	16,14,610	28,006	4,93,485	66,528	4,20,776	11,84,755	85,65,756	37,76,327
1923-24 .	26,13,708	12,56,601	9,75,564	6,64,620	1,07,900	18,59,908	36,220	6,54,726	50,376	5,47,380	13,16,135	1,00,83,198	44,56,894
1924-25 .	29,19,380	11,90,655	12,12,172	7,59,594	98,448	17,32,273	26,471	6,63,219	46,743	6,30,794	16,31,631	1,09,11,380	40,59,891
TOTAL .	1,56,70,055	94,09,451	72,33,102	41,82,712	7,24,874	1,37,90,579		49,08,434		40,38,027	88,95,123	6,89,42,357	3,51,59,989

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The Madras Provincial Co-operative Union,—Represented by the Hon'ble Mr. V. RAMDAS and Mr. K. G. SIVASWAMI.

Replies to the Questionnaire.

QUESTION 6.—INDEBTEDNESS.—The causes of indebtedness vary according to the nature of the tract and the economic status of the ryots. But, generally, it is the uneconomic nature of the holding coupled with want of supplementary occupations that is the main cause of debt. Purchase of lands at uneconomic rates of interest and extravagant expenses on marriages and ceremonies are mentioned as the causes for debt in many of the Resettlement Reports. But these operate mostly in wet-land tracts and among the richer class of *mirasidars*. The high incidence of land revenue in the deltaic areas of the Tanjore district also operates as a cause for the increase of indebtedness. In the dry areas the conditions are entirely different. Here, the purchase of land and the conversion of dry into garden lands by sinking wells are *bonâ fide* enterprises taken up by the better class of landlords tempted, as they are, by the high prices they receive in certain years for commercial crops. Years of insufficiency of rainfall follow consecutively or the prices of commercial crops fall down suddenly or both happen simultaneously, and the result is the ryot becomes unable to repay his debts, incurred at a 12 per cent. rate of interest. During these years the position of the average small-holder becomes miserable and he incurs debts for the purchase of provisions for his family and fodder for cattle. Sometimes he is forced to sell the cattle. The better class landholder maintains his farm servants and cattle without any work for them. When better years dawn, the average small-holder purchases cattle at rates of interest running up to 25 per cent. Even in normal years, he borrows for cultivation and family expenses at rates of interest ranging from 12 to 18 per cent. The growing of commercial crops to the detriment of food crops has made him dependent on the bazarman and the *shandy* for his provisions. Add to these also the fact that he is under the thumb of the middleman trader for the sale of his produce, one can understand the reason for the increasing indebtedness in the dry tracts. It is not maintained that the economic condition of the small-holder is bad everywhere. Certain intelligent ryots have improved their position in a few areas by growing sugarcane, plantains and turmeric. But the extent of their cultivation is small; and the gains that accrue to them are little, when compared to those that are derived by the creditor and middleman trader. It may be, that a few agriculturists take to vegetable gardening, dairying and the cultivation of lease lands and thus improve their position. It may also be, that in a few areas where there is a demand for labour from the Public Works Department and Railways, the labourers are enabled to improve their position. But their number is small. During years of insufficient rainfall, and fall in the prices of commercial produce, rates of interest rise up to 36 per cent., land values fall, auction sales are common, the small-holder becomes easily converted to the position of a tenant under the money-lender and the labourers flock to the hills. Generally speaking, in both the wet and the dry tracts, the small holding compels the ryot to incur debts for family expenses. In the dry tracts he borrows for sinking wells, expenses in the cultivation of garden lands, purchase of cattle and fodder, leather tubs for lifting water and provisions for the family till the time of harvest, at rates of interest ranging between 12 to 18 per cent. In years of want of rainfall, or fall in the prices of commercial produce, his position becomes worse. The figures given in some of the Resettlement Reports roughly indicate that about 2/3 of the *pattadars* in dry tracts and 1/2 in wet-land tracts, are indebted; and their mortgage debts alone amount to about half the value of all the lands held by them. The recent Census Report also raises a suggestive doubt whether the increase in the number of absentee landlords and tenants is an indication of the passing of the land

from the hands of cultivating owners to non-agriculturist moneylenders. We have given at the end a few statements to substantiate the position we have taken as regards the causes of the indebtedness of the ryot.

QUESTION 5.—FINANCE.—*Long Term Loans.*—Unless measures are taken to release the ryot from his indebtedness, the depressing atmosphere that at present exists in the rural areas will continue: and so long as it lasts, there is no hope of entrusting the average ryot with ideas of better methods of agriculture. The co-operative movement cannot achieve much in the provision of short-term credit for agriculture, while the ryot is under subjection to the moneylender and repays his prior debts from the harvested income. A heavily indebted ryot has no interest in his land as he is not sure whether the land will stay with him. The small nature of the holdings and the heaviness of the debt prevent the easy redemption of the ryot from his prior debts except by providing him with loans for periods extending at least to 40 years if not more and at a rate of interest not exceeding 7 per cent. Land mortgage banks cannot give these facilities to the ryot without State aid and the State is bound to help him as it makes a major part of its revenue from the land. We therefore suggest the following forms of State aid for the successful working of mortgage banks:—

(1) The Trust Act should be amended permitting the investment of Trust Funds in debentures.

(2) The State should also invest in the mortgage banks monies lying in deposit with it at little or no interest.

(3) The interest on the debentures should be guaranteed by the State till they become popular in the market.

(4) The State should contribute to the cost of an Inspector for inspecting and valuating lands and assessing the credit of borrowers.

(5) The right of summary recovery should be given to the mortgage bank.

In this connetion we would point out that the existing mortgage banks have failed to utilise the loan of two lakhs allotted by the Government for such banks. Any scheme to be successful should provide for a central organisation to issue the debentures, and primary banks at the bottom to issue the loans. We consider that the existing Central and Provincial Banks are eminently fitted to undertake mortgage banking as they already command sufficient influence and confidence among the public.

In addition to loans given for removal of prior indebtedness, the mortgage banks should also lend for productive improvements as sinking wells, and for the purchase of new lands for converting uneconomic into economic holding. The issue of *taccavi* loans through the Government agency has not been a success and the allotment under the same may be handed over to co-operative banks.

We do not consider that any special and far-reaching legislation is necessary to totally prohibit the mortgage or sale of land. But the object of a co-operative society to redeem a ryot from his indebtedness will be frustrated if a member is free to re-mortgage the land, which has been first mortgaged to the society. Legislation may help in restricting such re-mortgaging of land.

QUESTIONS 2 AND 23.—EDUCATION; AGRICULTURAL AND GENERAL.—Alongside with the development of mortgage banking, provision should be made for the general and technical education of the ryot. Excepting the co-operative officer none others have the aid of voluntary agencies to assist them in their work. The field staff of the Agricultural, Irrigation, Revenue, Forest, Labour, Local Self-Government and Education Departments have no local organisation through which they can propagate sound ideas of economic and social welfare. No department can really hope to educate the ryot without the aid of voluntary agencies. In a country like India where the ryot is generally illiterate, and ignorant of new ideas and methods of agricultural improvement, the temptation is naturally to administer institutions of rural life for him.

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An attempt should earnestly be made to build up national life through the self-exertions of the communities themselves. Further the education of the adult has a psychological method of its own quite different from that followed in practice for youths. Adults cannot be forced to learn and consequently any system of education for them should have its origin in awakening their desire to improve themselves. And this awakenment has to come through non-official propaganda. It should also be borne in mind that certain types of work do not lend themselves to being undertaken by a State staff, at public expense. For, the greater the number of organisations, the larger too will be the administrative and supervising staff, so much so that the whole of the tax-payers' money and even more will be required to pay their salaries and allowances. Whenever propaganda of any new idea, organisation of men for joint effort, assistance for the administrative work of local institutions and supervision over them have to be undertaken, the non-official agency is the best suited for the work. The State departments may appoint experts to advise and generally supervise the work of the several organisations, the Universities may supply trained men, and the State and the local bodies may give grants-in-aid, according to the nature and quality of the work, thus encouraging voluntary non-official effort.

We would divide the work in each rural area under two heads:—(*a*) Promotion of the economic interests of agriculturists and small industrialists and (*b*) Promotion of the physical, educational and social welfare of the rural population and the supervision over those rural institutions as panchayats and village courts which cannot be organised on a voluntary basis but require certain legal powers for their administration. A taluk should be the area of jurisdiction of these bodies though there is nothing to prevent a smaller jurisdiction where human material is available. For instance, a rural high school or a rural college may form the nucleus for organising a non-official agency for rural welfare work. Adult educational work and rural library service might form the functions of these bodies. Membership should be thrown open to all on a subscription basis, and teachers, lecturers, and representatives of co-operative unions and societies and village panchayats might be given representation in the executive. The officers and their subordinates of the Education, Health, Labour and Local Self-Government Departments might also be ex-officio members.

Any scheme of adult education should take note of the deficiencies in the character of the rural ryot and his unpreparedness for the present age of international commerce. Whatever lessons will impart to the rural mind the spirit of enterprise and the desire for joint effort, will arouse its consciousness and self-respect and put it in possession of the necessary knowledge required under modern conditions of political and economic life, should have a due place in the curriculum of studies. The University should draw up a rough outline syllabus with the above-mentioned purposes in view. It should maintain an Extension Section whose functions shall be to train teachers from among the staff of high schools and colleges and honorary workers, for undertaking the education of adults in rural areas. The State should make a capital grant to the University for the establishment of the Extension Section and also an annual recurring grant of 1/3 of the total expenses incurred in running adult educational centres. Another 1/3 should be contributed by the Local Boards and the balance raised through local subscriptions from individuals, co-operative societies and village panchayats. As visual instruction is of the essence of adult education in an illiterate country, the State should make a contribution at the start towards magic lantern and cinema accessories. Grants should also be made for rural libraries, the contribution being 1/3 each, from the State, the Local Boards and the local associations. We do not want to foresee what developments these associations will take in the course of time. They will no doubt be of great help to educate the village panchayat and village courts. They will attend to the physical, social and educational interests of the rural people. They may develop an atmosphere for the growth of folk schools for the education of the ryots in a liberal culture and a wide outlook. We are confident that when once these grants are given by the State and local bodies, non-official effort will amply

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come forth to organise adult educational work. When a sufficient number of these associations is formed, we can hope to co-ordinate their activities through district and provincial associations which will do their work conjointly with the University Extension Section.

While the establishment of a closer connection between high schools and colleges and the ryots will no doubt react on the school and enrich the local knowledge and experience of the staff, the curriculum in the high schools can be so modelled as to create an agricultural outlook in the students and attract their parents to imbibe new ideas of agricultural improvements. Lessons on civics, geography and history can be so taught in the higher classes as to instruct the student in the economic wealth of his area and methods of developing it. Demonstration plots may be introduced with a view to train the students in practical agriculture, and through them to stimulate their parents to adopt better methods of agriculture. But all these reforms mean the training of teachers from the point of view of rural reconstruction, and contributions by the State for the administration of demonstration plots and the maintenance of a teacher in agriculture.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—The second organisation necessary for promoting the economic interests of the people of an area is the Taluk Development Association. Its objects should be those mentioned in the bye-laws of such associations in the Bombay Presidency. There is no need so far as this Presidency is concerned (and no use too) to multiply agencies for this kind of work, and the existing Local or Supervising Unions may perform all the functions of a Development Association. These unions should not be constituted for small areas solely with the view of exercising a mere supervision of the accounts of a few good, bad, and indifferent co-operative societies. With all the good intentions of the Development Minister to bring together the Co-operative and Agricultural Departments and utilise co-operative societies for the spread of agricultural improvements, the achievement has been negligibly small owing to two causes. The one is the inherent weakness of Local Unions, and the second is the absence of any defined relationship of these bodies to agricultural officers. We propose therefore two remedies, *viz.*, (1) that the constitution of Local Unions should be so broadened as to permit the inclusion of individuals interested in agricultural development and (2) that there should be a single officer who combines in himself both the duties of furthering co-operation and introducing improved agricultural methods. We will deal later with item 2. The Local Union so constituted will consider schemes or organising societies for financing agriculture, increasing the production and marketing the produce. It will organise labour societies for undertaking *bund* and roads works. It will maintain a Demonstrator and a field man. It will open demonstration plots for propagating improved methods. It will arrange for agricultural excursions for interchange of ideas among agriculturists of different tracts. It will maintain a Supervisor for the primary audit of accounts of co-operative societies. The Demonstrators should be those trained in rural economics, co-operation and banking. They will be the paid propagandists of the Local Union for organising the ryots on the co-operative basis for all pursuits connected with agriculture. The funds of the Local Union will be derived from the contributions from co-operative societies, grants made by the State and local bodies for propaganda through shows, fairs, exhibitions, conferences and excursions, and for the maintenance of demonstrators and fieldmen, and subscriptions raised from individuals.

We would also propose that those sections of the Agricultural and Industries Departments which have to popularise a knowledge of improvements and organise the ryots for agriculture and small industries should be amalgamated with the Co-operative Department. We recognised that the research and educational sections of the Agricultural Department should be under an Agricultural Director. But the work of popularising improved methods in ryotwari areas cannot be divorced from that of the Co-operative Department. We recognise that the research and educational sections and the promotion of large industrial concerns should be under the Industries De-

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partment. But the organisation and revival of small rural industries cannot be divorced from the work of the Co-operative Department. We would therefore propose that the Registrar should have two experts under him, one an Agricultural Organiser and the other an Industrial Organiser. The Deputy Registrars should be University men in Rural Economics, trained in the College of Agriculture. They should be assisted in each district by a higher grade staff, one each recruited from the Agricultural and Industrial Departments. The Demonstrators appointed in the Local Unions will work under the supervision of the agricultural staff. Where Local Unions cannot command sufficient human resources for the spread of agricultural improvements, the Demonstrators will of course work under the agricultural higher grade officer in the district. A scheme like the proposed one alone will facilitate the introduction of improved methods of agriculture through the co-operative agency and harmonise the work of the three Departments of Co-operation, Agriculture and Industries. The scheme also recognises the place of the voluntary agency and the expert in agricultural propaganda. We would like to add that the re-organised department should also be charged with the duty of furthering co-operative marketing.

QUESTION 8.—IRRIGATION.—With the starting of Irrigation Panchayats under the present Irrigation Bill, the regulation of the distribution of water in channel tracts will no doubt be facilitated for the benefit of the ryot. The recent condition of channels and *bunds* in the Tanjore and Trichinopoly districts after 1924 floods has clearly demonstrated the utter futility of expecting their repairs and renewals solely with the aid of a departmental staff. Even in normal times there is much delay in the repair of Major Irrigation Works. We would prefer the handing over of contract works regarding *bunds*, channels and major tanks to Co-operative Labour Unions composed of *mirasidars* and labourers. It has been proved beyond doubt by the Co-operative Reclamation Societies formed recently for the clearance of silt that earthworks can be executed economically through the co-operative organisation. We take leave to mention here that unless there is a uniform policy followed by the Co-operative and Irrigation Departments, the promotion of Labour Unions is next to impossible. Co-operators have also been complaining about the bad condition of Minor Irrigation tanks. The North Arcot District Conference has been annually passing a resolution urging on the Government to undertake repair of tanks. It has been found by experience that the execution of contracts for minor tanks might be handed over to village panchayats. This policy, if steadily pursued, will to some extent, relieve the irrigation difficulties of the ryots. The promotion of Labour Unions and the handing over of contracts to them will quicken the restoration of tanks and make it possible to maintain them in good order.

The third proposal we would make for the improvement of irrigation in dry tracts is the sinking of wells and the supply of power facilities for the irrigation of crops from the wells. It is not fair to throw on the ryot the responsibility of finding out suitable places for the digging of wells. The Government should do the boring work free of cost, and wells, being protective works in areas subject to scarcity of water, there is nothing wrong in the extra expenditure being incurred by the State. Wherever possible, irrigation societies for digging wells should be promoted and the *taccavi* loans distributed through them with a view to have the works carried out promptly and cheaply. The insurance of crops has been suggested as a method of helping the ryot to tide over lean years but the uneconomic character of the holdings and the large risks of failure of crops will hardly attract any institution to undertake the work. Finally we would suggest that a large irrigation policy in relation to agricultural development rests entirely in the transference of irrigation as a reserved subject to the portfolio of the Development Minister.

QUESTION 22.—CO-OPERATION.—At the outset we would state that in the present condition of the country we ought not to expect rural co-operative societies to conduct banking and trade unaided by central institutions. If the idea of working from the bottom is taken to mean that small institutions should serve the agriculturist to obtain credit, to purchase jointly,

to convert raw produce into finished produce and market them profitably, the co-operative movement will only miserably fail. Capital has to be raised through Central Banks. Joint purchase and sale have to be developed by Central Unions. Neither will it be possible to expect the central societies to work as exclusively federated institutions, for they will require influential individuals to give the necessary direction and leadership. What is far more important than the policy of working from the bottom is the right attitude of mind to educate the rural people to run their co-operative banks and trading concerns. The Trading Unions have failed in this Presidency for want of necessary stimulus from the centre to purchase economically and to push the sales quickly. The Triplicane Stores is a success in the Madras City, because it works from the centre through a system of branches, without, on the other hand, forming divisional independent stores which might not be able to beat down competition by themselves. The Bombay Provincial Co-operative Bank does successful business through the shops attached to its branches in oil-cakes and chemical manures and in the produce of members which it would not have been able to achieve if the work had been left in the hands of local societies. *The second point* we would urge on the Commission for the promotion of joint purchase and sale is the due recognition by the State of the place of voluntary agencies in conducting propaganda. Intense propaganda is very necessary, particularly in an illiterate country where the ryots are not enlightened enough to understand their needs and combine for their satisfaction. The State can help this propaganda better by the grant of subsidy than by directly undertaking it. Where a production and sale society is formed for making manures, converting groundnut or sugarcane into finished produce and selling these things, intense propaganda have to be undertaken not merely by a Local Union, but by a district co-operative agency. *Thirdly*, the central societies engaged in banking, production or sale, require expert management. We would therefore propose that the University should institute two special applied courses in crop-finance and trade. The existing College of Commerce should institute an advanced course in Co-operaive Banking and accounts for the students who pass in the applied courses. *Fourthly*, the State should grant loans at low rates of interest for the purchase of plant and machinery and the building of godown. *Lastly*, it should discourage as well the export of bone and fish manures and oil-cakes in the interest of promoting a forward manurial policy in the presidency.

QUESTIONS 18 AND 22.—IMPROVEMENT OF RURAL LABOUR.—*Labour Societies.*—It is one of those anomalies of the present administration that Labour should be a Reserved subject, while Agriculture, Co-operation and Industries are Transferred subjects. The District Labour Officer is not under the control of the Co-operative Department, while he is in charge of a large number of Co-operative Societies. The problems of rural labour are so closely connected with those of the agriculturists that a separation of these two subjects under two independent departments will result in a failure to look at agricultural questions as a whole. Is it the object of the Government to put all labourers belonging to the backward classes under one department, and caste labourers under another? How can it be that Labour Unions should be under the supervision of the co-operative department, while lease societies are under that of Labour? We consider that it will be conducive to best results if the Labour Officers in the districts were transferred to the new proposed Development Department. In this connection we would point out that a large number of societies for the backward classes is supervised by Local Unions composed of agricultural credit societies. These require intense supervision of a special type, as they consist of illiterate members. The Maclagan Committee recommended to Government that they should make a special contribution for the clerical work of these societies. But the Government is not making any grant to a majority of unions for undertaking this work except in a few areas of the Madras City. Such grants are absolutely necessary in the interest of improving the condition of the backward classes. We would also point out that it is not wise to start independent credit societies for field labourers. Of course there may be

exceptions in places where the people are so caste-ridden as to exclude this class from membership. As has been mentioned already, any work of organising adults for purposes of social welfare or the conduct of business, will be successful only when promoted through voluntary agencies. The Labour Department feels the need as much for honorary workers as the Co-operative Department. We would suggest that the work of organising field labourers for their economic betterment and educating them in habits of thrifts and a higher standard of life, should be handed over to non-official agencies such as Social Service Leagues, the Y. M. C. A., the Servants of India Society, and Local Co-operative Unions.

In addition to the permanent reforms required in the department and a change in its outlook for enlisting the co-operation of voluntary agencies for wide propaganda work, certain other faculties are also required from the State for the improvement of labour conditions. Co-operative societies which obtain leases of lands from landlords and sublet them to labourers to improve their economic status. But if a lease society is to help labour in all ways for introducing agricultural improvements, bettering housing conditions, supplying work to them round the year, training them in habits of thrift, and in raising the level of their education and culture, it should have an expert paid Secretary, who takes a good deal of interest in the work. Colonisation of cultivable areas has also been undertaken by the Labour Department and this is a little more difficult to tackle. The right type of colonists has to be selected and the State has to give loans for long periods extending to 30 or 40 years at an economic rate of interest for reclaiming lands, digging wells, and building farm houses. More than all these facilities, the colony should have the fortune of getting the services of an efficient paid secretary as in the case of lease societies. The problem of finding workers can be settled satisfactorily, only when the University institutes special courses in problems of rural labour, along with rural economics. Such men should be selected and given a short training in the spread of improved methods of agriculture.

QUESTION 22.—CO-OPERATION.—*General.*—We have answered all the questions adverted to already in the belief that co-operation is the one and only method for the development of the agricultural industry. Raising of credit, joint purchase of agricultural and domestic requirements, joint sale of agricultural produce, after converting them into finished ones wherever necessary, and the utilisation of the produce for other industries, all these can be economically and efficiently performed by the co-operative method in ryotwari areas. Even other efforts for increasing agricultural production as suggested in the Questionnaire should be undertaken on the co-operative basis. When writing on this subject we would like to refer to the possibilities of an economic supply of firewood in rural and urban areas, through the co-operative agency. Wood-cutters' societies can be formed for undertaking fuel contracts from the Forest Department. The policy of promoting such societies will of course be possible only with the hearty co-operation of the Forest Department. (*Vide* question 19-*b*).

(*b*) (*i*) Excessive fragmentation is undoubtedly a source of making them uneconomic. Any attempt to prevent such fragmentation through legislation by altering the Law of Succession or Partition will be seriously resented and is impracticable. A voluntary scheme of consolidation on the lines adopted by Mr. Calvert in the Punjab may be tried in Madras also.

(*c*) We do not consider that any activity should be furthered through co-operative organisations with the aid of legal power for coercing the unwilling. When such a stage is reached, the concerned work should be rather handed over to administrative bodies as Local Boards and panchayats which are invested with legal powers in the interest of civic rural welfare. The voluntary basis of co-operation should never be lost sight of.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(*a*) Finally we would add that the problem of rural welfare is closely bound up with that of prohibiting drink in rural areas. Certain agricultural communities as the Kallars,

Padayachis, and Goundars, and mainly the field labourers are addicted to the drink habit and we can hardly expect one part of Government to preach against drink while another part is interested in maintaining a sufficient excise revenue. Unless the State adopts a forward policy in this matter, any schemes of social and economic welfare have seldom got any chances of success.

We summarise below the reforms suggested by us for improving the economic and social conditions of the rural population:—

(*i*) The re-organisation of the departments connected with agriculture and labour.

(*ii*) Grants to voluntary agencies from the State and local bodies for organisation, education and propaganda.

(*iii*) Scope for the educated classes to come into the co-operative movement and work for the masses, by a broadening of the constitution of Central Co-operative Societies.

(*iv*) Training of candidates in the University, the agricultural college and college of commerce for employment in co-operative banking, trading and labour societies.

(*v*) The stimulation of co-operative business, credit and non-credit, through central agencies as Central Banks.

(*vi*) State aid for mortgage banks and industrial and marketing concerns; Prevention of export of manures by the State.

(*vii*) Legislation to restrict re-mortgaging of lands already mortgaged to co-operative societies.

(*viii*) A scheme of adult education and promotion of rural welfare through non-official agencies assisted by the University and the Local Boards. Giving a rural bias to the curriculum of studies in rural high schools, and

(*ix*) Handing over of minor-irrigation works to village panchayats and promotion of Labour Unions and Irrigation Societies for undertaking *bund* and road works, channel and tank repairs, and the sinking of wells.

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Oral Evidence.

16490. *The Chairman:* Mr. Ramdas, you are President and Mr. Sivaswami, you are Secretary, of the Madras Provincial Co-operative Union?—Yes.

16491. Mr. Ramdas, perhaps you will answer the questions and of course it is for the Secretary whose name is on our report as one of the witnesses, if he does not agree with anything that you say, to let me know so that the matter may be recorded. Would you at the outset care to make any statement of a general character or shall I ask you one or two questions? We have your note of evidence before us?—I would prefer to answer questions.

16492. Perhaps you will tell us, just to clear the ground, the constitution of your Union?—Our Union consists of representatives of local unions in the Presidency and also of urban banks and a few individuals who are taken as honorary members. We have what are called local unions in this Presidency; there are about 300 of them. We have got our general body consisting mostly of the representatives of the unions.

16493. Supervising Unions?—Yes.

16494. Have you representatives of the District Federations?—They are very recently formed and we have not made provision for them yet, though seven or eight of them have applied for affiliation.

16495. Have you got representatives of all the Supervising Unions?—About half of them; about 150 or 160 out of 300.

16496. The others are not represented?—No; the reason is one part of the country consisting of 13 districts has another Federation, I mean, the Telugu districts have their own Provincial Union. It is really not a Provincial Union because it is not for the whole Province.

16497. You are a sectional union in the sense that you only speak for the remainder?—No; that is not so, because we have got affiliation of some unions and Central Banks in that part of the country also. The bye-laws permit our operating over the whole Province. Our idea is to have sectional Unions for different language areas, Tamil, Telugu and so on, but the Madras Union should be the real Provincial Union.

16498. You are super-imposed above them?—Yes, we call them Divisional Unions.

16499. You will not have achieved your full ambition until you have representatives from all Supervising Unions?—Well, not fully.

16500. You wish to have representatives from those other Supervising Unions?—Yes, and we are rapidly getting them.

16501. That is the constitution of your body. How many members does that provide you with?—One hundred and fifty unions with one representative each, 70 urban banks, 20 honorary members, and 22 Central Banks.

16502. That is 262?—The honorary members are not members with full rights; they have no right to vote at the meetings of the general body; they can be represented on the governing body and vote at meetings of the governing body.

16503. That is a large gathering?—Yes. We have an annual meeting at which most of them are present.

16504. How do you elect the committee?—President, Vice-President and Secretaries are elected by the general body, and there is also an Advisory Board of 22 elected by the general body who elect the rest of the members.

16505. That is the Advisory Board?—Yes.

16506. Have they the power to nominate other members outside the union?—No. They elect four representatives, and they and the Secretaries, President and Vice-President form the committee.

16507. Would you describe the status and function of your Union? Are you an official body?—No. We are an incorporated body.

16508. You are not an official body; you are a corporation?—Yes.

16509. What is your function?—Propaganda, co-operative education, supervision.

16510. Supervision over what?—Over all the co-operative organisations in the Province, the local unions specially of which we consist, and District Federations.

16511. What about the banks?—We have not much supervision over the banks. They are represented on our body, we take advice from them and we see how the financing is going on and how the societies get the money.

16512. Would the banks welcome your advice?—Sometimes they do.

16513. But you do not offer it?—No.

16514. Do you pay great attention to the working of these banks?—We do pay attention.

16515. What do you think of the services rendered to the movement, first, by the nine central banks?—We have nearly 32 central banks now.

16516. What do you think of the services rendered by those 32 banks?—They are rendering good services; the total capital of all the banks is about 5½ crores.

16517. Do you think they are providing you with capital at as low a rate of interest as is compatible with good management?—I should think so.

16518. Do you speak from conviction born of close personal investigation or from general impression?—Not from a general impression; I am also President of the Provincial Bank and I know the working of the banks very closely.

16519. You are the President of the Provincial Bank?—Yes, the Provincial Co-operative Bank.

16520. I do not know what bank it is?—It is called the Madras Urban Central Bank Ltd.

16521. So you can tell all about that bank?—Yes.

16522. At what rate are you borrowing from that bank?—We were borrowing at 6½ per cent.; we have now reduced it to 4 to 4½ per cent.

16523. You were borrowing at 6½ per cent. Can you get new money at 4 and 4½ per cent.?—Yes, and even that we are refusing.

16524. When you were paying 6½, at what rate were you lending?—We were lending at 7½ per cent. It has now been reduced to 7 per cent.

16525. You are now paying 2 to 2½ per cent. less in interest for the money you borrow. At what rate are you lending?—7 per cent.

16526. Presumably, if you were solvent when you were borrowing at 6½ per cent. and lending at 7½ per cent., you are now making a considerable profit.—No, we are not, for the reason that all our money is not absorbed; a very large portion of it is invested at a very low rate of interest.

16527. The movement is over-capitalised?—We have an effective investment of only 50 lakhs in the movement.

16528. Where is the balance?—Invested in other banks, Government paper and so on.

16529. What is the average rate of interest you are getting from your investments outside for such money as is lent to cultivators through primary societies?—Some of it we have lent at even so low a rate as 2½ per cent.; but it goes up to 5 per cent.; it does not go above 5 per cent.

16530. Some at short call?—Yes. Recently we have arranged with the Calcutta Provincial Bank to lend at 6 per cent. for 3 years.

16531. We have not the accounts of your bank or any of the other banks before us at the moment, but I should like your opinion as to whether you can provide money to the primary societies at a lower rate of interest than

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7 per cent., consistent of course with sound finance?—It depends upon the volume of our transactions. If at a lower rate we get a larger volume of transactions, of course it would be more profitable than a smaller volume of transactions at a higher rate of interest. At present business is very slack, and I do not know whether it would pay to lower the rate of interest.

16532. You have raised your margin, on your own showing, from 1 per cent. to 3 per cent.?—Yes, but more than half is not invested effectively. I would add one word. The lending at a lower rate of interest will not by itself lead to the absorption of our capital, for the reason that the individual borrowing power of individuals and societies is very small. I do not think the difference in the rate of interest will make any difference as to inducing people to borrow largely unless the individual borrowing limit is raised considerably, as I suggest it should be. The low rate of interest will not induce people to borrow.

16533. Do you think if you and I walked into a typical village and you offered your money at 7 per cent. interest and I at 6 per cent. that they would take your money in preference to mine?—Yes, they do, unless we are working on the same principles of co-operation, because our conditions are more favourable with regard to recovery and other matters.

16534. Let me put it in another way; Is it really your view that the rate of interest at which you offer to lend money through the co-operative societies has very little effect upon the amount of loans taken up by cultivators?—Not much effect so long as the borrowing limit is very low, such as Rs. 200 or Rs. 300. It will make a difference if the borrowing limit is very high.

16535. Have you anything to tell the Commission about the working of the land mortgage banks?—Yes. At present we have five banks in the Presidency. They are primary societies started by individuals living within a radius of 7 miles.

16536. They are territorial banks?—Yes. Two or three only are functioning; the others are not.

16537. The others are sleeping?—Yes, I think so. Government allotted two lakhs in the Budget last year, and I do not think any of it was taken. The allotment had to be reintroduced in the next budget. The difficulty with these banks is they are not able to command confidence in the market and they will not be able to issue debentures unless they do so. The Registrar of the Co-operative Societies has prohibited us from lending money upon the debentures issued by these banks, his own opinion being that it is not quite safe to lend upon these debentures. It is, therefore, hardly to be expected that the outside public will have any confidence in them. The second point is that the share capital that an individual should take is fixed at one-eighth of the loan to be taken by him. Such a high percentage as 12½ prevents individuals from joining. The third point is that the highest borrowing limit is only Rs. 1,000; that is hardly attractive.

16538. We were told by another witness that that limit is only to be imposed so long as the movement is in the experimental stage. Is that also your view?—Yes, but even to begin with it ought to be something higher than that.

16539. At what rate are these land mortgage banks borrowing their money?—They are borrowing at 7 per cent. from outsiders and 6½ per cent. from the Government.

16540. And they are lending at what rate?—9 per cent.

16541. Is it your view that they could not obtain their money more cheaply than 6½ per cent.—Not if the primary banks raise the debentures; but if a central agency like our bank raised the debentures we should certainly be able to raise money at 5½ per cent. or 6 per cent.

16542. The primary banks have not the same hold on the public?—No.

16543. What is it that makes such an apparently attractive offer as 6½ and 7 per cent. on mortgage unattractive in practice?—Because the money-lenders can lend at 8 or 9 per cent. in the villages on mortgages.

16544. We sometimes see a phrase "adapting the indigenous system of banking to modern requirements". Does that mean screwing up the rate of interest of modern banks a couple of points or what does it mean exactly?—I do not know what is at the back of it.

16545. Do you know what those words mean at all?—I do not.

16546. "Adapting the indigenous system of banking to present day requirements"; what is the indigenous system of banking?—The indigenous system of banking here is ordinary moneylending; or differs very little from it.

16547. I take it your hope would be, if the co-operative movement spread sufficiently, that you would so reduce the rates of interest enjoyed by the ordinary commercial moneylender that his credit and cash resources would be available for business through the land mortgage banks?—Yes, I do expect that.

16548. That is what the ultimate effect of your movement will be if it succeeds?—Yes; and I am told that in some places it has already had that effect.

16549. So that to that extent, you are adapting the indigenous system of banking to modern requirements?—Yes, in a sense.

16550. But I do not get very much enlightenment from you as to what these people mean when they use that phrase 'the indigenous system'?—Moneylending by the *sowcar* is the only indigenous system; there is really no scientific method of banking at all.

16551. It is just possible that some people who use the words do not themselves understand them?—May not, I cannot speak for them.

16552. I do not know whether you heard the evidence given before the Commission this morning?—No, I came after lunch.

16553. Is it your view, as representing the Union, that more might be done in the way of using the co-operative organisation throughout the country for the purpose of propaganda and demonstration, and the distribution of seeds of better varieties, and so on?—Yes, a great deal can be done.

16554. A great deal more than is being done?—Yes.

16555. Is there that sympathetic and active touch between the Agricultural Department and the Co-operative Department that there ought to be?—No, that is one of my points in the memorandum.

16556. Is it your idea that your own body might take a more active part in extending the usefulness of the co-operative movement?—We are anxious to do it, but we are handicapped for want of resources.

16557. That brings me to the question of funds; Would you tell the Commission exactly what the funds at your disposal are?—So far as State aid is concerned we get nothing at all, except a grant of Rs. 1,200 for a training class in the city; that is the only help we get. It is earmarked for the purpose, and we spend it for that purpose. The only other source of income is the contributions of these unions and central banks, and the sale of our bulletins. We have an annual income of about Rs. 10,000.

16558. That is not enough for your purpose?—Not at all. We are making our Union live more by selling our publications at a higher cost and making something out of it.

16559. You are trying to eke out a difficult existence by selling your literature at higher rates than you would wish to do if you had the funds?—Yes.

16560. To what source do you look for an increase in your revenue?—We have a claim on the State, in the first instance, probably for a larger grant as in the case of Bombay. Secondly, when all the unions are affiliated to us, we expect a larger income from them, because each union will contribute its share; so that with the increase in the affiliation fees, we are bound to get a little more income.

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16561. Has any suggestion ever been put forward for grouping the Unions in various Presidencies and Provinces as an All-India organisation, for the purpose of interchange of information?—Yes, it has been put forward.

16562. Have you an All-India organisation?—No.

16563. Do you think it would be a good thing to have it?—Yes. The Bombay Institute asked our opinion about it, and we have supported the scheme for an All-India Institute.

16564. On page 680, you summarise the reforms you suggest for improving the economic and social conditions of the rural population: Your first suggestion is "The re-organisation of the departments connected with agriculture and labour?"—And also Co-operation.

16565. That would be by way of having a greater degree of co-ordination between those departments?—Yes. We want not merely co-ordination but also amalgamation as regards the propaganda work. On page 676, we have put our ideas in a short compass. I shall read out from there. "We would also propose that those sections of the Agricultural and Industries Departments which have to popularise a knowledge of improvements and organise the ryots for agriculture and small industries should be amalgamated with the Co-operative Department. We recognise that the research and educational sections of the Agricultural Department should be under an Agricultural Director. But the work of popularising improved methods in ryotwari areas cannot be divorced from that of the Co-operative Department. We recognise that the research and educational sections and the promotion of large industrial concerns should be under the Industries Department. But the organisation and revival of small rural industries cannot be divorced from the work of the Co-operative Department. We would therefore propose that the Registrar should have two experts under him, one an Agricultural Organiser and the other an Industrial Organiser. The Deputy Registrars should be University men in Rural Economics, trained in the College of Agriculture." That is the gist of it.

16566. That would be an organisation super-imposed upon the normal departmental work; you would not suggest any amalgamation of the financial functions of these several departments?—Our idea is this: while the research and technical knowledge may be left to the departmental heads, the man who popularises these ideas must combine in himself all the functions; he must be the organiser, and the developing and organising must be in his own hands.

16567. On page 680, under sub-heading (iii), you say.—"Scope for the educated classes to come into the co-operative movement and work for the masses, by a broadening of the constitution of Central Co-operative Societies". Is it really your view that the educated classes will come forward if they are given this opportunity?—Yes, they will. Some of them are already there; but I can say that if we take the constitution of the co-operative movement, there is not much provision for the educated classes to come in. Of course, it is a perfectly logical idea; if you take the local union, the local union consists purely of the representatives of societies, but if you want effective propaganda or effective supervision you do require the co-operation of the educated classes in the urban localities in that area, but they cannot come in because the union is purely of a federal type. If you take the next institution above it, the District Federation, there also the individual has no place; in fact, the by-law has been so framed that the individual cannot have a large place in it. If you take the Provincial Union, the same is the constitution, and unless these constitutions are broadened, giving a large place to the educated classes, it is not possible to expect effective propaganda and effective supervision in this country.

16568. If we assume a typical rural credit society, situated within reasonable and convenient distance of a large urban centre, how would you suggest fitting in your educated three or four or half a dozen men into that society? What place would you give them in the primary society? That is where their assistance is needed?—Yes, and in the Supervising Unions also.

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16569. In the primary society, would you bring them in as ordinary members?—Yes, as honorary members. In some way or other they must be allowed to come in.

16570. I take it they would take a few shares and come in?—Yes. But the difficulty will be the territorial qualification. Supposing a man belonging to a particular village is a school-master or lawyer, living outside the area, he cannot be admitted as a member under the rules.

16571. How about the villagers' opinion on this point? Because, after all, that is the most important matter of all. Would they welcome the presence of the two or three or half a dozen educated persons from the towns?—I should think so; they want guidance and assistance, and they would welcome them.

16572. You do not think they would be inclined to regard such invasion with some suspicion?—No. After all, so far as the men who conduct the primary societies are concerned, we cannot say that in every village it is the ryot who does it; it is done by the village school-master or the agent of some landlord, and they have no community of interest with the agriculturists at all.

16573. These gentlemen would stand to the agriculturists in the village very much as the urban well-wisher who would be inclined to give his services, the only difference being that they are known personally to the ryots in the first case, but in the second case they are not so well-known?—Yes, but the latter would be more useful having generally a wider civic outlook.

16574. I observe that you suggest that State aid for mortgage banks should take the form both of guaranteeing the interest on mortgages and of an advance of capital?—Yes.

16575. Do you think that the guaranteeing by the State of the interest would overcome the public reluctance to lend money to the mortgage banks?—To some extent it would; in fact, I find a passage in the Maclagan Committee's Report to this effect.

16576. I suppose most of these land mortgage banks are situated in more or less populous neighbourhoods, usually in country towns?—4 of them are in rural areas and 1 is in Mangalore.

16577. Let us take the one in Mangalore for the moment; it is offering its debentures to the public at 7 per cent.?—Yes.

16578. Take the ordinary shopkeeper, who is making something out of his business; I suppose he puts most of his surplus profits back into his business?—Yes.

16579. That type of person does not lend money?—Not ordinarily.

16580. Is there much liquid capital in urban communities of that sort available for investment?—No, excepting the professional moneylenders: the merchants do not lend

16581. Do the merchants hoard currency to any great extent?—Not many of them; very few.

16582. They reinvest their profits in their own business?—Yes.

16583. So that in the ordinary Indian town, there really is very little money available for investment in this class of security from sources other than the ordinary moneylenders?—I should think so, unless these debentures which are floated by some of these banks are negotiable in the market as freely as other securities so that they can get back the money whenever they want it.

16584. That is why you suggest that they should be made trust securities?—Yes, I am asking trust moneys to be invested also.

16585. *Sir Ganga Ram:* When you talk of lending and borrowing, does it carry simple interest or compound interest?—Simple interest, so far as the Central Bank is concerned.

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16586. Without any limit? Supposing you lend me a lakh of rupees at 6 per cent., how would you recover the amount?—We have got the instalment system.

16587. And supposing one instalment is not paid, will you not charge compound interest?—We do levy a penalty.

16588. What is your limit of compound interest, six-monthly or yearly?—Six-monthly penalty.

16589. You know that the Government rate of 5 per cent. implies compound interest after six months?—Yes.

16590. *The Chairman:* I should like to clear up just one point. In the event of a particular borrower on mortgage failing in part or in whole to pay his instalment, does it mean that the lender on that particular mortgage suffers to that extent?—No.

16591. The absolute guarantee for the capital is on that particular mortgage?—Yes.

16592. There is no collective security on a series of mortgage, but the bank pays the 7 per cent. and the capital is secured by the mortgage?—Yes.

16593. So there is no question of any reduction in the amount of interest paid, consequent upon the bank being in temporary difficulty, or anything of that sort?—No; we are only lending to the extent of 50 per cent. of the value of the property, and it is fully secured.

16594. *Sir Thomas Middleton:* Does the Provincial Co-operative Union do a large amount of propagandist work?—Yes, a fairly large amount.

16595. And advisory work?—Yes.

16596. Which of these two classes of work do you give most attention to?—Propaganda.

16597. You say that your income is partly derived from affiliation fees?—Yes.

16598. How is the affiliation fee settled?—Is it per head of membership of the affiliated society or on the turnover of the affiliated society?—It is Rs. 5 for each of the local unions every year, and for each Central Bank it depends on the working capital, not exceeding a maximum of Rs. 25.

16599. It is a variable arrangement for different institutions?—Yes.

16600. Have you much trouble in collecting the affiliation fees?—No.

16601. Do they pay quite regularly?—Yes.

16602. You have no cases of unions coming in for a few years and then dropping out?—No, it is very rare. We had such cases: now we realise the fees by the V.P.P. system, we send them one of our publications and realise the full amount.

A very useful expedient.

16603. *Dr. Hyder:* On page 673 you say, " The high incidence of land revenue in the deltaic areas of the Tanjore district also operates as a cause for the increase of indebtedness." Are you thinking of the incidence per acre?—Yes.

16604. What is the incidence per acre?—I have got a table here which gives the details; the Resettlement Report for the Tanjore district for the year 1922 gives the rates, the Government *kists* for every year and the margin left to the ryot.

16605. What is the rate per acre?—For the first *taram* the Government rent is Rs. 16-10-0, and the margin left to the ryot is Rs. 31. For the second *taram* the Government rent is Rs. 14, and the margin left is Rs. 26. So it is one-half practically. The Government rent comes to about 50 per cent. of the net income of the ryot.

16606. Are you thinking of the incidence per acre? I have a report before me which shows the incidence per acre for wet and dry lands. The incidence per acre is Rs. 5 in Tanjore district; it gives the figures for a number of years. The incidence in the year 1909 was Rs. 5 per acre?—But the incidence is not that; it is Rs. 16-10-0 for first quality land.

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16607. You are thinking of the first quality, and you have picked out Tanjore, where the incidence happens to be very high as compared with the other districts, the Tanjore district is a very rich district, but the incidence in regard to others is Rs. 5. Do you think that that amount is very high?—Yes.

16608. What is the gross yield per acre?—May I point out that in the memorandum we say "the incidence of land revenue in deltaic areas of Tanjore district." We have confined ourselves to that, and we have not referred to all the districts. We know it is particularly high in Tanjore. That is why we have put it like that.

16609. But my point is that that deltaic area of Tanjore is also very rich?—Yes.

16610. If one were to compare land revenue to the total yield per acre, one would get an idea?—Yes, and hence we say it is high.

16611. Proceeding, you say a little below that here there is insufficient rainfall. Then you say that the prices of the commercial crops fell suddenly, etc. That might operate as a cause?—Yes.

16612. But how does this happen? Do both of them happen simultaneously?—Sometimes they happen simultaneously and sometimes not.

16613. How? If there is a failure of the rain, there will not be so much produce and consequently the farmer in Tanjore would not be in the expectation of getting plenty. The prices would naturally rise?—The conditions of the market do not depend merely upon the local produce.

16614. The local markets, central markets and the world market are all linked up together, are they not, nowadays?—Yes.

16615. I do not understand, if there is a failure of the local harvest, how the price of the local crops goes down?—I will take a concrete example. In parts of the Coimbatore district, for the past two or three years there have been no rains. As a result, the ryots have been suffering. At the same time, the fall in the price of turmeric, cotton, etc., has also affected the ryot.

16616. On page 674 of your evidence, you say "The State should also invest in the Mortgage Banks monies lying in deposit with it at little or no interest." What monies are you referring to?—I am thinking of monies like the deposits with insurance companies. A lot of money is available like that and there are also other sources. In the Maclagan Committee report they refer to the security money tendered by Government servants, etc.

16617. You are not thinking of the savings banks money, etc.?—No.

16618. In item (4) you say that the Government should contribute to the cost of an Inspector for inspecting and valuing lands and assessing the credit of borrowers. Does this happen in other parts of the world, that the State pays the charges of such an Inspector?—In fact it is now paying by taking debentures of the existing primary mortgage banks in this Presidency at half per cent. less. It is a contribution to the cost of inspection. It seems to exist, because I have read that in many countries the cost of inspection is contributed to by the State.

16619. I think you are invoking the principle of State aid; the principle of State aid is observed on the continent of Europe?—Yes.

I am not sure but so far as I remember the whole of this is paid by the banks themselves.

16620. Now I ask you to turn to page 680 where you say you would like the educated classes to come into the co-operative movement; in answering the Chairman you said that you would like to broaden the local franchise of primary societies?—Not of societies. Those societies are business institutions. We mean the supervisory and propaganda bodies.

16621. You are not referring to primary societies?—No, they can come into the societies by taking shares.

16622. Are these supervising societies affiliated to your union?—Certainly.

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16623. What number of societies would you fix for supervising?—At present it is something between 20 and 30. It depends upon so many factors. For instance, I would have said about 15 societies two years ago when we had no motor cars; but the interior is now opened up by motor cars; everything depends upon proper communications and good roads.

16624. In regard to the average number of societies allotted to a Supervising Union, you say North Arcot 24, South Arcot 25, etc. Is not that too large a number?—No, I do not think 30 is too large a number.

16625. You do not think 25 would be a safer number?—Anything between 20 and 30 will do.

16626. *The Raja of Parlakimedi:* Your work consists of propaganda and advice?—Yes.

16627. May I know whether you approach the villager direct?—Sometimes we go to societies themselves, and sometimes the unions may hold meetings of the general body.

16628. Are villagers invited to those meetings?—Generally what we do is, we go and attend the general body meetings of the banks or unions where they all gather.

16629. Practically everybody is interested in attending such meetings?—Such of them as take interest do attend.

16630. Do you carry on your work in the vernacular?—Yes.

16631. As regards advice, what subjects do you deal with? Do you deal with the general prosperity of agriculture or simply confine yourself to banking?—Mostly co-operation.

16632. Do you not extend co-operation to improvement of cultivation and marketing?—Certainly, sometimes we do, but very much with regard to the way in which the working of the society should be run, how to take loans, etc., and with regard to the management of the society itself.

16633. You do not take up the general subject of prosperity?—We do, but not to such a large extent as to deserve any mention.

16634. Taking such opportunities, do you also talk to them about sanitation and education?—Yes. I have been to the south recently, and I spoke about co-operative education, sanitation, etc.

16635. *Sir James MacKenna:* You are Chairman of the Madras Central Urban Bank Ld.?—Yes.

16636. What is the administration of that bank? How are its affairs managed?—By a general body and by their representatives. There is an executive committee consisting of the President, Vice-President and seven other members elected by the board of management. The Board of Directors consists of representatives of each of these banks and five individual shareholders.

16637. A big board?—Yes, of about 36.

16638. *The Chairman:* Is any salary attached to the directorship?—We get a sitting fee of Rs. 10 per sitting and our travelling allowance.

16639. *Sir James MacKenna:* The Board of Directors is 36 in number? Are they responsible for the whole management of the bank?—Yes.

16640. Where does the Registrar of Co-operative Societies come in?—He does not come in anywhere, except for tendering advice.

16641. Does he tender advice of his own accord or on your asking for it?—Sometimes this and sometimes that.

16642. Otherwise, you are perfectly autonomous?—Yes.

16643. You are in such a good position that you can borrow from the public at 4½ per cent?—4 per cent now.

16644. What dividend do you pay?—Fixed statutorily at 9 per cent.

16645. Limited to 9 per cent?—Yes.

Hon'ble Mr. V. Ramdas and Mr. K. G. Sivaswami.

16646. Could you let us have a balance sheet for last year?—Yes, we will send you one.

16647. That balance sheet is not audited by the chartered accountants?—Yes, it is.

16648. That is done by qualified auditors?—Yes.

16649. You are in the happy position of having too much money, *i.e.*, you do not know what to do with it?—Yes.

16650. Have you considered the possibility of a Central Co-operative Clearing Bank for the whole of India? As many instances of difference in the supply and demand of money occur according to seasons, it may happen that while Madras rejoices in an excess of riches, the other Provinces will be glad to have the advantage of some of your surplus money?—I was told the subject was discussed at a meeting of the Provincial Banks; but the idea was not approved.

16651. There may be a difficulty about the rates of interest; for instance, you can borrow at 4 per cent, but Burma would have to pay 7 per cent or 8 per cent; but what is your idea?—Personally I would favour that idea of an All-India bank.

16652. I think it is more attractive than feasible?—I also think so.

16653. What is the rule that limits the scope for the educated classes to take an interest?—Because these institutions are on a federated scale, with unions consisting of representatives of societies, the village society consisting of a few village people who want loans and the management of the unions consisting of representatives of these bodies. Educated men cannot come in by themselves; they can come in only through the societies. Generally, the educated man does not join the society because there is no need for him to join. After all, only one can come in through the urban bank affiliated to the local unions.

16654. Only one representative?—Yes, and that too is very difficult because he must have the territorial residence qualification. We have a bye-law in the District Federation that only a representative of the local union should be the Secretary. So that restricts the scope for getting the best men for the District Federation. For instance, if the District Federation general body is permitted to select any Secretary it likes from the members, it may select a man who is in the town; but the union must have only one representative and you have only one union at the headquarters. So the effect of that bye-law is that the town union representative will become the *ex-officio* Secretary of the Federation so long as it lasts. That will be the effect of it.

16655. Taking your note generally, I find you lay great emphasis on the value of non-official efforts in all progressive rural reconstruction?—We do.

16656. May I ask you whether in general you notice any increase in the desire among young Indians to devote their energies to this line of rural and general social uplift?—(*Mr. K G. Sivaswami*): As far as I have seen I have known many young men do take interest in the work. I am a member of the Servants of India Society and we started some flood relief work in Tanjore and Trichinopoly in 1924-25. We got any number of local people to work for these things. It is not even for a short time, for a month or two, but for a year or more. There are Professors in some colleges who do this work. Their salary is Rs. 100 to Rs. 150 a month, but they have to meet their out-of-pocket expenses themselves when they take up social work.

16657. You really think there is a marked improvement with regard to interest in social and rural reconstruction?—There is and it is growing.

16658. *Professor Gangulee:* With regard to Sir James MacKenna's question regarding non-official assistance, are you of opinion that the non-official helpers in this Presidency have any practical experience on the ground floor of co-operative structure?—Some of them have.

16659. Do they understand the co-operative movement and principles?—They do.

16660. Where do they get training?—They observe the societies working in their midst. In these local unions a few get their training.

16661. Have you any system of propaganda?—Yes; we parcel out the Presidency amongst ourselves and our members go out regularly and we have organised some rural training classes where we do some work.

16662. Do you concentrate in any particular centre or diffuse your activities throughout the Presidency?—More or less diffused.

16663. No concentration?—Not much.

16664. You will perhaps agree with me that co-operation is a form of self-help and the credit really in co-operative movement is character. Do you find any improvement in that direction?—There has been since the movement has started and it is greater now.

16665. Now, can you tell us whether the co-operative societies or yourself carry on effective educational work to educate the primary society which is the basis of the co-operative movement?—That is the weakest point in our organisation. We have not been doing it satisfactorily.

16666. And you realise that is a very fundamental point?—I realise that all our difficulties are due to the want of education in primary societies.

16667. You cannot possibly hope to raise the structure of the co-operative organisation unless you have that basis righted?—I quite agree.

16668. Turning to your idea of a mortgage bank, you have, I understand, two land mortgage banks in this Presidency?—Five.

16669. Two working?—Yes, two working.

16670. Now have you followed the working of those two banks?—To some extent, yes.

16671. Their success suggests further extension?—I do not think so; not on those lines. They have not succeeded at all. I think they have completely failed; that is my view.

16672. Have you any alternative suggestion to offer as to how to improve them?—Yes; my suggestion is that the business of raising debentures ought to be entrusted to a centralised body like the Madras Central Urban Bank or any other centralised Bank which can command cheap credit and which can sell debentures at a lower rate of interest and command the confidence of the public and then lend money to the primary banks or any other banks.

16673. You are the President of the Madras Central Urban Bank?—Yes.

16674. The Madras Central Urban Bank can help such a scheme of land mortgage banks?—I am decidedly of opinion that it can.

16675. Can you tell the Commission briefly the direction in which you can help?—We can raise debentures at 5½ per cent; that is my hope and we certainly need not go beyond 6 per cent. At present we raise money at 4 per cent. Therefore we should be able to raise debentures at 5 or 5½ per cent and even if you lend at 7 per cent, it will leave a margin of 2 per cent, a thing which is impossible if the business is undertaken by the primary banks.

16676. On page 676, with regard to the local unions you say. "The one is the inherent weakness of Local Unions, and the second is the absence of any defined relationship of those bodies to agricultural officers." What is the inherent weakness you are referring to?—These unions are unable effectively to supervise the societies and the Supervisors they appoint are men without any training; therefore they are not able either to educate or to supervise the primary societies.

16677. How would you train these people? Have you any suggestions?—At present we give them a short course of lectures extending to 2 or 3 months and that is all the education that they get and the scheme of training all the supervisions is not complete. The pay is not sufficient to attract men of character and ability; that is our difficulty.

16678. In that way you hope to solve the first problem, the inherent weakness of your local unions. The second problem, you say, is the absence of any defined relationship of these bodies to agricultural officers, what do you really

mean by that?—All that we want is that the agricultural officer should make the voluntary organisations the field of his operations; he must go to them; he must educate them; through them he must carry on propaganda.

16679. When you say "agricultural officers" whom have you in view?—The Deputy Director and the Demonstrator. If he takes the voluntary organisations into his confidence and works through them he can achieve much more than he can personally.

16680. Do you suggest that at present there is no such co-operation between the non-official agencies and the Department of Agriculture?—I do suggest that.

16681. Have you made that point clear to the Director of Agriculture at any time?—Yes; whenever I went out to the mofussil I always invoked the aid of the Deputy Director of Agriculture; he used to come with me for the propaganda work. He himself felt the necessity for greater co-ordination.

16682. But nothing has come out of your interviews?—Except that it makes him take more interest in these things.

16683. Who are the members of these local unions?—They are the representatives of the societies.

16684. What educational qualifications have they?—They may be able to administer their village society to write their accounts, but not be able to build up the leadership in the area. That is why we say that the better educated people should also have a place in these local unions.

16685. How are you going to create that leadership, that rural leadership that you are aiming at? Have you any definite proposal to make?—The leadership has to be created by association of the better class and better-minded people with those whose average is lower, and for that the constitution should provide scope.

16686. Just one more question; on page 16 you give an Appendix* in which you give us very interesting analysis of the extent of the indebtedness of the Tanjore district and you make that exract from the Resettlement Report of 1922. Now what conclusions would you draw from the analysis that you present before us?—The conclusions are that the indebted *pattadars* are indebted to the extent of nearly the whole of their property and in the case of those people nothing but credit for a very long term at a low rate of interest will be able to save them.

16687. Just look at item No. 8; you find that the percentage of indebted *pattadars* is 44 in the delta and 65 in the uplands. Let us take the delta which is marked more rich; then the average extent owned by indebted *pattadars* is 1½ acres. So do you think a long term credit can in any way redeem these people?—Yes; if it is sufficiently long and the interest is sufficiently low, some of them may be redeemed.

16688. Mr. Calvert has just gone out and has left a few questions with me to be put to you. In your union meetings is the business transacted in English or vernacular?—In English necessarily because our union representatives come from various language areas. But if it is a general body meeting it is mostly in vernacular.

16689. Are the representatives attending actual cultivators who plough the land themselves?—Some of them are and some are not.

16690. Do these people possess the majority of votes on all important matters?—They do.

16691. *Mr. Kamat:* Mr. Ramdas, you said that you had very little State aid for your Provincial Union. Are you conversant with the state of things in Bombay about the Provincial Co-operative Union?—Not fully; but I am told that they get more than Rs. 14,000 per annum.

16692. You are familiar, Mr. Sivaswami, as a Member of the Servants of India Society with the conditions in Bombay?—*(Mr. Sivaswami)*: I am a little familiar.

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* Not printed: Appendix to the memorandum of the Madras Co-operative Union.

16693. As far as I know they get rupee for a rupee?—Yes, up to a maximum of Rs. 50,000.

16694. I am not quite sure; but I think it is more?—I do not know.

16695. Your Madras Government here are rather niggardly in helping your Union?—They do not help us at all.

16696. Then in the matter of this bye-law to which you referred, shutting out the help of non-official educated men, you know also the Bombay conditions, I suppose?—Yes.

16697. You know there are educated men, college professors and others who help the movement?—Yes.

16698. And some of them serve on a pittance of Rs. 100 a month, and anxious to do public service in various spheres, they take an active part in the co-operative movement?—Yes; I know many.

16699. Therefore I wonder whether you have sufficiently agitated in this Presidency to remove that embargo against educated men?—We have been agitating without effect; the fact is that there was a conference in March last, and almost the whole Conference suggested that there should be larger inclusion of individuals. But in spite of that conference the bye-law was changed in these District Federations (which are similar to your district branches in Bombay) not permitting these individuals to have a larger place.

16700. You know, for instance, that in the Fergusson College, practically all the college professors make it a point to join the village unions, municipalities and co-operative bodies?—Each one is interested in a village society.

16701. And he does not speak of public administration unless he had personal acquaintance with the working of these bodies?—Certainly.

16702. Is there any rule that there should be the fullest liberty to take part in propaganda although there may be restriction on joining as members of co-operative societies?—What we say is we do not want the institution to be swamped by educated men but utilise them as much as we can by giving a place for them.

16703 I want to know whether you are quite definite on that point. The college professors in Bombay Presidency are allowed to take part in propaganda; but perhaps there may be a restriction so as not to allow them to join as members of the primary societies; but so far as propaganda work is concerned, their help is not shut out. Have you agitated for that aspect of it here?—Here the colleges do not prohibit the lecturers and others.

16704. Not the colleges, but the department responsible for co-operative movement?—We have sufficiently indicated it even in the recent Provincial Conference.

16705. I want to know something about your training classes and the system you have under your Provincial Union. Have you got regular classes which you arrange?—Yes.

16706. Or is it the department?—No; we arrange a class for three months in the year in the city, from October to December. It is going on now.

16707. So that when you complained that there was paucity of men in the Supervision Unions, probably what you meant was enough people could not be brought to the training classes?—They could not be brought to the city. We want them in the rural training classes.

16708. The difficulty is to get the men in the rural areas?—Yes.

16709. About your land mortgage banks. From your account, it seems the experimental banks now being run are nothing but primary societies glorified under the name of land mortgage banks?—They are a mere apology for land mortgage banks.

16710. On page 674 you say: "We consider that the existing Central and Provincial Banks are eminently fitted to undertake mortgage banking as they already command sufficient influence and confidence among the public." Do you think you can command sufficient resources to tackle this problem?—Yes,

most certainly, provided the interest on the debentures is guaranteed by the State and the debentures are made trust securities.

16711. Provided that is done?—Yes.

16712. That is to say, you will not require additional resources to be placed at your disposal by Government from money in the savings bank or elsewhere? —So far as the Madras Central Urban Bank is concerned we do not think a guarantee from the State is necessary. We can raise it ourselves.

16713. What about the successful management of this business? How can you investigate the titles to, and encumbrances on, the land if the matter is left to you?—The State must either lend the services of trained men or pay for it.

16714. It is a matter of knowledge of law?—We want people of the Deputy Collector's or Tahsildar's grade or lawyers to investigate these.

16715. You mean if the work is entrusted to you, Government should give you the aid of legal men in the matter of investigating titles?—Yes, either in the shape of men or money.

16716. If money is granted to you, you will take the risk of investigating the titles to land and the previous encumbrances thereon?—We shall.

16717. On this question of adult education by non-official agency, in another Province a suggestion was made that something like a "Servants of Rural India Society" could do a good deal of this sort of non-official work in the matter of village reconstruction and social work among the villagers. Do you think in your Province an agency like that will come forward to work efficiently for adult education, medical aid or improvement of other amenities in villages?—I think the Provincial Union may be converted into a body of that sort instead of multiplying agencies.

16718. But the Provincial Union has a definite function; it has not got the function at present of that wider social welfare work which will be done by the society to which I have referred?—It is within the purview of our functions, but we have not undertaken it because there are no funds.

16719. Have you enough of public spirit in the Presidency or enough of public workers to carry on this sort of work?—Yes; I am very hopeful.

16720. I quite appreciate your idea that such sort of work should be undertaken pre-eminently by non-official agency, but I want to be clear that you have the material in this Presidency for undertaking it?—I am absolutely certain that we have.

16721. I want to know whether your Union is conducting anything in the nature of sales societies or shops for the sale of agricultural produce?—You mean a bank?

16722 I mean a bank?—As you are having in Bombay?

16723. In Baramati or Kolhapur?—No. That line of work has been attempted here by three industrial societies, one at Shiyali, one at Tindivanam and another at Kallakkurichi. The one at Shiyali has been liquidated, the one at Tindivanam has been making losses for the past many years; the one at Kallakkurichi is making a bare profit. The fact is we begin from the bottom; we have to register these societies and then federate them. Instead of that if the Central Bank opens a branch and maintains a shop and takes up the work we will have more efficient service for these rural areas.

16724. This morning we were told that the Kallakkurichi society is showing some profit?—Yes; but an Inspector is lent free to it, and if you deduct his salary it is not giving even 4 or 4½ per cent dividend on the share capital.

16725. So you consider the sales societies supervised by the Co-operative Department to be failures?—Yes.

16726. If non-official men, honorary organisers, were to look after these, as they do in Bombay, do you think they would be more successful?—In regard to that point, we have an example of such a society at Nidamangalam. There is a gentleman there who takes immense interest in it and goes from place to

place. Although his society has not extensive transactions it is making a profit every year, because he is a non-official propagandist himself.

16727. Does he combine with business knowledge, which is necessary for conducting a sales society, the influence to counteract the competition from vested interests?—No. That is why we say that whenever these societies are started they should be started by central institutions which command the services of influential men in the district or provincial towns, institutions which will command, in short, brains, capacity and influence.

16728. I am asking you specifically this question because my experience either as a liquidator of co-operative societies or as a supporter was this: unless you have a man thoroughly competent to manage, knowing the trade which the sales society is engaged in, and able to counteract the influence of competition by vested interests, such a society suffers. Have you got such men to conduct them? Take the jaggery trade, for example; the man must know the trade and he must know who are competing and how to counteract that competition?—I think such men will come only by working the societies.

16729. So, you are in favour of enlisting non-official agency for conducting even sales societies?—Yes.

16730. You refer to the Irrigation Department and the promotion of labour unions. Are you conversant with labour unions?—I am conversant with one labour union in the Tanjore district. The whole trouble in regard to this union arose in this way; the Local Boards do not view it with sympathy because when the work is done through the District Board, and through their officer, it might get in a larger profit; the Public Works Department do not view it with sympathy because they think that the Co-operative Department has come as an enemy to appropriate the kind of work which is done by the contractors over whom they have got a large influence. Apart from these two, there is the vested interest of the contractors. Now take a labour union; we take the services of the very same contractor; he works in the labour union this year; and next year he leaves the labour union and takes the tender himself.

16731. Have you considered what could be done in villages for the improvement of village sites, clearing of cactus, repair of roads by organisation of labour on a purely voluntary basis; that is, the villagers will contribute labour and will not be put to out-of-pocket expenses? Could you make labour unions a success in that line and show them what kind of work on a voluntary basis could be done in villages?—The village panchayats have been taking up some work like these, repair of tanks and roads, whenever the Collector has been willing to give such work. I know that the Collector of Ramnad, Mr. Ramamurthi, used to transfer such works to village panchayats, and they were done very efficiently by them. The handing over of these minor works to the village panchayats has to be done by the Local Board or the District Collector.

16732. You make a suggestion that the portfolio of Labour should not be a reserved subject, but should be transferred to the Minister for Agriculture. Are you quite emphatic on that point?—Yes.

16733. You think there will be no clash of interest?—I do not think so.

16734. *Rao Bahadur Muniswami Nayudu:* At page 676 of your note of evidence you say: "But the work of popularising improved methods in ryotwari areas cannot be divorced from that of the Co-operative Deparment." You use the word "ryotwari"; do you use it advisedly as distinguish from zamindari areas?—No, I use it collectively.

16735. You mean nothing whatever by it?—Nothing whatever.

16736. With regard to the Taluk Development Associations; are you familiar with the working of such associations in the Bombay Presidency?—Yes.

16737. Do you think such associations can be of use in this Presidency also?—Yes.

16738. You contemplate the present Supervising Unions being converted into something like Taluk Development Associations. One union now supervises about 30 societies within a radius of 7 or 10 miles; but the Taluk

Development Association will have a much larger area. Do you contemplate extending the area of Supervising Unions corresponding nearly to the taluk, or do you contemplate Taluk Development Associations corresponding to the area of the Supervisin Unions?—Corresponding to the area of Supervising Unions.

16739. That would mean bringing into being a very large number of associations of that size?—The improvement we suggest is that the jurisdiction should be increased.

16740. That is, more than 30 societies will be taken up by one Supervising Union?—Yes.

16741. Would you contemplate Supervising Unions having an area as large as that of a taluka?—That depends upon the availability of men in the area.

16742. Your scheme can fructify only if there is support?—Certainly.

16743. From outside bodies like the Government and the Taluk Boards?—Yes.

16744. Then you refer to the question of the educated classes not being brought in. Let me take you step by step. Do you contemplate the admission of educated classes as such into primary societies?—I do not understand what "as such" means.

16745. If a village society is started, do you want any urban educated members in that society?—They must join as ordinary members.

16746. Do you want the educated classes, the people living outside that village, to be members of the society?—Under the by-law, they must be residents of the village.

16747. Do you propose that the by-laws should be amended so as to admit of educated classes living outside the village to become members of the village society?—If they belong to the village but are not actually residing in the village but in an urban area, they must be allowed to do so.

16748. You want the educated classes who have some interest in the village, but for some reasons are living elsewhere to be admitted to such societies?—Yes.

16749. Do you expect that those educated people who, for some reason or other, are temporarily residing elsewhere, would take a strong interest in the management of the primary society?—If they take sufficient interest, it would be an advantage to the society, because they have got the necessary equipment.

16750. The members of the managing committee or the Secretary are elected members; do you expect a non-resident educated member of that village to be elected as Secretary, to carry on the day to day duties?—Not as Secretary.

16751. He will be only on the governing body?—Yes.

16752. He will not be available on any occasion except when he is able to come down to his village? Supposing a man is not a resident of the village, but is living miles away, what would be the position?—I am not contemplating cases where a man lives far away.

16753. You would restrict admission to such of the educated classes who live within a reasonable distance, and not too far away?—Yes, to those who live at a convenient distance; but it is more intended for the propaganda bodies. While I advocate this, I have mainly intended it for the propaganda bodies being enlarged.

16754. With regard to Supervising Unions, is there any rule now prohibiting an educated member of that locality from being a member of a society there and becoming thereby a member of the Supervising Union?—He can come through the society.

16755. If the amendment you propose is accepted, then there will be a chance for him to come on to the Supervising Union?—That gives only one representative; I want more educated men on the Supervising Union.

16756. What is the method of recruitment of these people to the Supervising Union?—The right of co-option may be given to the Supervising Union.

16757. To co-opt outsiders?—Yes.

16758. Would you also place some restriction as to the distance at which they should reside; would you say that they should live at a reasonable distance?—Fix a convenient limit; I would leave it to the Registrar. If there are workers in an area, let them have the scope to come into it; that is all.

16759. Supposing they are elected, and they have got the scope, how do you expect their co-operation; is it by taking up propaganda?—Yes; they should visit the societies, inspect the societies, and so on.

16760. As a member or as secretary, according to the wishes of the governing body?—As the general body chooses; as secretary or in any manner they want him.

16761. Do you contemplate any payment to the people for the work they do?—No.

16762. If these Supervising Unions are given the functions which you are referring to, and if the constitution continues as now, is there anything which would prevent, or which you contemplate would prevent, them requesting the educated classes to do honorary work by way of giving lectures or doing any other propaganda work?—They have no place in the constitution.

16763. You therefore think that unless they are members of, or find a place in, the governing body, they will have no interest in going there?—Yes.

16764. Honorary work would not be a sufficient incentive for them to take it up?—When they have no place in it, it is not humanly possible for them to take an interest in an institution.

(The witnesses withdrew.)

Mr. A. RANGANATHA MUDALIYAR, M.L.C., Madras.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(a) (i). The indigenous methods of agriculture are the results of long experience. The scientific value of different operations is not fully known as yet. Research is needed to find out this. With this information and with the knowledge of modern agricultural practices of other countries our indigenous methods might be adopted and improved to give better results.

No single research institute can undertake this kind of work for a whole Province, since the conditions vary from place to place. The Province should be divided into areas of more or less similar conditions and a research institute established for each as funds permit.

Every attempt must be made to have these institutes manned by competent Indians and if no research experts are available promising Indian officers and students ought to be sent abroad for training and return.

I am not for the employment of foreign agencies for I find from experience that many of the officers recruited abroad treat India as a training ground and avail themselves of an early opportunity to secure other appointments elsewhere. I must not be understood to blame them for doing so. Further, even if they serve their full term in India and retire, the country loses the fruits of their ripe experience.

As regards finance, there is no doubt that a good deal of money will be needed not only for research work but also for other measures calculated to develop the agricultural industry of the country, and after all I do not see why a good slice of the revenue derived from land should not be devoted for these purposes. The administrative machinery on the land revenue side is fairly well organised and does not need any considerable expansion. A good part of the revenue due to increase of assessment as a result of periodical re-settlements and of the remission in the provincial contribution should be devoted to the amelioration of the conditions of the rural population.

(b) Agricultural Engineering has not been the success it was expected to be. No agricultural implements superior to the indigenous tools have been designed.

The experiments of the Millet Specialist have not shown so far any encouraging results.

(c) Far too little attention has been paid to the improvement of red soil cultivation. For example, no attempts are made to find any improved variety of cotton suited for this soil. No work yet is done to develop drought resisting varieties of *jowar* (Sorghum).

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(a) There have been improvements in the black cotton soil area in the yield of cotton due mainly to the distribution of better seeds. In parts of the Presidency farmers have taken to economic transplantation of paddy due to the efforts of the Department of Agriculture.

(b) Field demonstrations should be more numerous to be really effective and for that:—

1. A larger number of Demonstrators are required;
2. Judicious selection should be made of villages for demonstrations for it is easier to get cultivating landowners to try the improvements than the tenants;
3. Pecuniary help to ryots to enable them to adopt improvements should be rendered promptly, for example by expeditious loans for purchase of implements, levelling of soil and carrying out other operations.
4. Small areas of land on private fields might be taken on lease and improved methods demonstrated thereon at Government expense.

(*c*) Expert advice might become more acceptable than now by—

1. Cinema shows which will impressively show all operations of improved agriculture.
2. Short courses of lectures for farmers at one or other of the agricultural farms; two or three ryots from each taluk might even be helped by railway fare to attend these lectures.
3. Sale of implements on instalment plan, and on favourable terms.
4. Sale of improved seeds on credit.

(*d*) Greater use of iron ploughs and improved cotton seeds are striking examples of success. I think this success is due to the personal effort of the Demonstrators in the first instance and subsequently to the realisation by the ryots of their advantages.

QUESTION 4.—ADMINISTRATION.—(*a*) Periodical conference of the Heads of departments, with a few outsiders acquainted with the subjects dealt with in the conference would facilitate interchange of ideas.

(*b*) I doubt whether an addition to the scientific staff of the Government of India would result in indirect advantages to the Province.

(*c*) (*i*) Number of Agricultural Demonstrators and Veterinary Assistants should be employed on a very much larger scale than at present. Research staff should be strengthened to solve the large number of problems facing the agriculturists.

(*ii*). The charges for transport by railway and steamers of manures, livestock, agricultural produce and implements should be fixed at a minimum.

(*iii*) Roads are quite inadequate and village communications receive practically no attention. In some of the localities the movement of country carts is impossible during the rainy seasons. Bridges over all streams and causeways across all big rivers should be constructed.

(*iv*) The Meteorological Department is not rendering any service to the agriculturists.

(*v*) Postal service is too costly; facilities are to be given for the transport of eggs, butter, etc., by parcel post from rural to urban areas.

(*vi*) The Agricultural Department must make arrangements to obtain daily telegraphic reports of prices of agricultural produce prevailing at different trade centres and post them at the Post and Telegraphic offices, for the information of ryots.

Wireless may be used in the near future for broadcasting agricultural knowledge and information.

QUESTION 5.—FINANCE.—(*a*) More co-operative credit societies should be instituted and there should be little delay in granting loans to ryots. Co-operative societies should stock seeds, implements and manures and distribute them to the ryots. Long-term credit ought to be advanced to farmers for permanent improvement of land and for liquidation of existing loans.

(*b*) There should be unification of agencies for giving credit to ryots so far as Government or semi-Government agencies are concerned. Whether *taccavi* loans should not be advanced through co-operative societies is a matter for consideration.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (*i*) Borrowing is chiefly resorted to for—

(1) Purchase of land, (2) Marriages and other ceremonies, (3) Trade and speculation, (4) Buildings, (5) Permanent improvements, (6) Purchase of livestock, etc.

(*ii*) The sources of credit for the ryots are:—

(1) The Government in their administration of *taccavi* Acts. (2) Co-operative societies, (3) Moneylenders.

(*iii*) Reasons preventing repayment are:—

(1) Failure of seasons. The Bellary District Manual of 1872 tries to give the climatic characteristics of the Bellary district for 70 years since its cession by the Nizam. No information is furnished for 6 years out of the 70. Of the remaining 64 years no less than 40 years were bad years from the agricultural point of view. The subsequent history is not different (*vide* pages 77 to 80, Bellary District Manual of 1872).

(2) High rates of interest.

(3) The insufficiency of the average income from farming to provide living for a family.

(4) Want of subsidiary industries.

(*b*) It is obvious that the causes which now stand in the way of the ryot's repaying his loans must be removed; that would mean:—

(1) Loans within the limits of his borrowing capacity should be available at easy rates of interest. (The borrowing capacity of a ryot should be fixed in advance subject to modification from time to time).

(2) Recoveries should be made by easy equal instalments spread over 30 to 50 years.

(3) Complete liquidation of all existing debts even by percentage payment by resort to legislation if necessary.

(4) The ryot must be able to borrow as and when he needs providing he does not exceed his borrowing capacity.

Assuming that a man borrowed in the first instance up to the maximum of his borrowing capacity his application for a fresh loan should be favourably considered if it is within the sum paid by him towards the discharge of his original debt.

(5) Interest should not be higher than 6 per cent. per annum.

(6) *Taccavi* loans advanced by the Government and the loans by co-operative societies shall always be first charges on the hypothecated property and have precedence even over private loans advanced to the ryots after the first Government loan.

(*c*) Normally nothing should be done to limit or curtail the credit of the ryot. But if he should apply to and obtain from the Government loans by hypothecation of the property his credit should be restricted to the extent suggested in answer to question 6 (*b*).

QUESTION 8.—IRRIGATION.—(*a*) (*i*) Several new schemes of irrigation as well as extension of the existing ones are needed in the Ceded Districts which form the famine zone of the Presidency; but I shall restrict myself to Bellary district which I know best. That there is ample scope for new irrigation schemes will be borne out by the following extract from the Report of Col. Henderson, Civil Engineer, dated 21st November 1853. "The District of Bellary is always bountifully supplied with rivers and tributary streams for irrigation of its soils. It contains within itself all the essential elements of prosperity. The rivers and streams which intersect it might be taken advantage of to a much larger extent than now for the supply of works of irrigation". These remarks are no less applicable now.

One can see no justification for delaying the execution of the Tungabhadra project which has been under consideration for over half a century. It would certainly pay the Government to carry out this project for the following reasons:—

(1) The direct net income will be sufficient to give a reasonable return of interest for about 6 per cent. on the amount invested. As a matter of fact the West Canal Project, the plans and estimates for which are ready, is calculated to yield a return of over 8 per cent. I do not think it would be much less in the case of the East Canal, the investigation of which has

been promised. Even if it were it would be still worth while for the Government to undertake the project and save themselves and the people the enormous loss they are put to owing to the neglect of this project. The following extracts from official documents would bear out the above.

In the sixties some irrigation schemes had been prepared for irrigation of tracts in the Bellary district. With reference to these the Collector reported as follows:—

"The estimated amount for these works (without considering the reservoir for the second crop) is Rs. 95,00,000 or under a million sterling. The interest on this sum if guaranteed by Government at 5 per cent would amount to Rs. 4,75,000 or £47,500. In this district in 1854 there was actually loss of about four times that amount, *viz.*, by hurried expenditure on famine roads £133,000 and by remission on waste lands £80,000 to say nothing of the loss to the people of their crops and cattle."

"As far as can be ascertained the total bill for direct expenditure and loss of revenue due to famine in this one district even in the last half a century (1854 to 1897) amounts roughly to no less a sum than Rs. 196 lakhs more than twice the estimated cost of the Tungabhadra project as per previous letter quoted; see following figures—

	On relief lakhs.	Loss of Revenue lakhs.	
1854 . . .	8	4¾	The loss to the ryots will never be known but was of course quite incalculably larger.
1866	2¼	1¼	
1876-78 . . .	88	37	
1884-85 . . .	2¾	6½	
1891-92 . . .	2	7	
1896-97	29	7½	
	132	64	

"The cost of relief operations with the losses of revenue due to deficient rainfall in these districts (Cuddapah, Kurnool, Bellary, Anantapur and Nellore) is reported to amount to over 6 crores of rupees." Irrigation Commission's letter No. 364 of the 9th March 1902, Appendix 1 in Vol. 11, Tungabhadra Project, paragraphs 183, 186.

(*a*) (*ii*) Anicuts across Hagari (in Bellary district) here and there would be useful in filling up the tanks in the neighbourhood in the rainy seasons.

(*iii*) Bore-wells might be tried in selected villages and water lifted and supplied to ryots at cost price. To reduce the cost of water for the ryot the number of wells in any locality must be large enough to justify the appointment of a full time mechanic.

Want of understanding and absence of imagination on the part of the Government, I regret to say, are the chief obstacles to extension of irrigation in my district.

(*b*) That there is needless waste of water by ryots has to be admitted. This is due to the unevenness of their fields and want of means to level them up so as to take minimum water.

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QUESTION 10.—FERTILISERS.—(*a*) Greater use of natural manures such as green leaves, fish guano, oil-cakes, bones, cattle manure could be made of in this country.

These manures could be supplemented by artificial manures whenever the former are not available in sufficient quantities.

Our soils are deficient in organic matter and therefore they require any amount of organic manures. Chemical manures to the total exclusion of organic manures are likely to deteriorate the soils by spoiling their physical texture. To prevent this it is necessary to use in greater amounts:—

(1) Fish guano and fish manure.

(2) Oil-cakes.

(3) Bonemeal.

(4) Trichinopoly rock phosphate.

Fish guano which used to be sold at the rate of Rs. 50 to Rs. 60 per ton about eight years ago is not available now even at the rate of Rs. 160 per ton. This is mainly because it is exported to foreign countries such as Japan, China and Ceylon in very large quantities. The export of this should be prohibited.

Oil-seeds are being exported to foreign countries in very large quantities and only a very small quantity is crushed in this country. The oil-cake which would be available in this country in large amounts if oil-seeds were not exported is now lost to us. Oil-seeds, therefore should not be exported and the Government should take steps to demonstrate to the people better methods of pressing oil which could be sent out without becoming rancid during the transit. Bonemeal which is the source of phosphorus is also exported to Ceylon, and other countries and, therefore, should also be prohibited from exportation.

(*b*) Frandulent adulteration of fertilisers can be prevented by educating the farmers by legislation and by ready and cheap means of having fertilisers analysed for the farmers by the Department of Agriculture.

(*c*) New fertilisers can be effectively made popular by supplying liberal amounts free for trial to one or two farmers in each area.

(*d*) In Hospet the use of ammonium sulphate has increased.

(*e*) The residual effect of sulphate of ammonia, sodium, nitrate, cyanamido and other chemical fertilisers on soil should be carefully investigated and measures taken to prevent any bad effects on soil by continued use of these manures.

(*f*) To stop use of cowdung for fuel, the supply of other cheap fuels for cooking purposes should be increased.

QUESTION 11.—CROPS.—(*a*) (*i*) *Jowar* (Sorghum), paddy, ground-nut, sugarcane and cotton are among the more important crops of the Province and measures should be taken to increase the quality and quantity of yield of these crops by selection, breeding and other methods.

(*ii*) Several varieties of cotton including Egyptian varieties were tried at Hagari farm in Bellary district and I understand they were all failures due perhaps to difference in climatic conditions.

It is desirable that fodder crops suitable for poor dry soils should be introduced.

There is every possibility for introduction of a better yielding variety of sugarcane but no serious attempts seem to have yet been made in this direction. New varieties of ground-nut also should be imported and tried.

(*iii*) At present the distribution of seeds is carried on only by the Agricultural Department and it cannot be expected that with their limited staff they could cover the whole area. It is, therefore, necessary that co-operative societies or other agencies should be entrusted with this work and empowered to give the seeds on credit to ryots unable to pay cash immediately.

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(*iv*) (1) Shelter for wild animals in forests should be reduced as far as possible by encouraging the removal of scrub jungle.

(2) Licenses for firearms must be freely granted to ryots. The license fees for breech loading guns must be placed at not more than double the rate fixed for muzzle loaders.

(3) Permission should be given to villagers to hunt wild animals in reserves by beats.

(4) Government should purchase wholesale barbed wire fencing and supply it on hire or sell it at cheap rates to ryots.

(*b*) No.

(*c*) Cotton is an example in Bellary district. A new strain poularly known as "Farm Cotton" has been evolved in Bellary district by the Department of Agriculture and it is fairly popular with ryots. It gives better yield, better outturn (per centage of lint to seed cotton) and better quality of lint and it fetches better prices in the market.

Question 12.—Cultivation.—(*i*) The existing system of tillage is to plough deep the dry land in black soil area once in five or six years which is not sufficient to preserve moisture in a dry climate like Bellary. The soil should be ploughed deep at least once every other year. This can be made possible by using stronger bullocks or by the use of power driven machinery. Power machinery can be made popular by removing the import duty on agricultural implements, tractors and steam tackle and also by reducing the prices of kerosene and petrol to the ryots (kerosene and petrol are both cheaper in foreign countries than in India).

Investigations should be carried out to find out if fallowing cannot be practised in the dry land areas to make better use of the moisture available and also increase the nitrogen content of these soils.

(*ii*) So far as wet lands under perennial conditions are concerned the rotation consists in alternate sowing of paddy and sugarcane. Experiments should be made to improve this rotation by substitution of any other crop for paddy or by the addition of a third crop into the rotation. Investigations should also be made to find out if alternate fallowing in areas with scanty rainfall would not be more economical.

Question 13.—Crop Protection.—(*i*) Our worst crop diseases are:—

(1) Boll worm on cotton, (2) Calcaris (*Aggi purugu*) on *Jowari*, (3) Stem borer on paddy, (4) Swarming caterpillar on paddy, (5) Grasshopper on all cereal crops.

No effective remedies have yet been discovered for these diseases.

Question 14.—Implements.—(*a*) We need:—

(1) Boll worm on cotton, (2) Calcaris (*Aggi purugu*) on *jowari*, (3)

(2) a machine for harvesting *thenai*, *ragi* and paddy,

(3 a machine to harvest *jowari* heads of the standing crop, *i.e.*, a *jowari*-header,

(4) a sugarcane crusher worked by an engine suitable for the use of small middle class farmers with about 10 acres of cane, and

(5) a clod crusher for sugarcane lands.

Some harvesters of this kind are in use in other countries. Such machines have to be adopted to our conditions. These should be manufactured in India by subsidising competent firms if necessary. For instance, there is one firm in Bombay Presidency, *viz.*, Kirloskar Brothers, and it is trying its level best to cater to the needs of agriculturists by manufacturing and selling improved implements as cheap as possible. Such firms should be encouraged by the Government.

(*b*) The difficulty experienced at present by the ryot in the adoption of improved implements is the lack of good bullocks suited to these implements and the poverty of the ryots to buy better bullocks. This can be remedied

by prompt long-term loans either by the Government or by any other agency at cheap rates of interest to the ryots.

QUESTION 15.—VETERINARY.—(a) The Veterinary Department should be under the Director of Agriculture who should, however, have a Veterinary Expert as one of his Personal Assistants for the following reasons:—

(1) Agricultural Demonstrators who are constantly on tour could more quickly come to know the outbreak of diseases and bring the information to the notice of the veterinary officers than the village officers.

(2) The Agricultural Demonstrators could be supplied with medical chests as Farm Managers were supplied formerly so that they could treat minor complaints.

(b) (i) Except a few, there are no dispensaries under the control of Local Boards. The dispensaries under Local Boards are not likely to work well.

(ii) The need for expansion is noot adequately met. For example, there are four veterinary institutions, including the S. P. C. A. Dispensary at Bellary, in the Bellary district which has an area of 5,700 square miles and a population of 539,000 cattle and 425,000 sheep and goats spread over 921 towns and villages.

(iii) I do advocate the transfer of control to the provincial authority and even the few that are not under the provincial authority at present might as well be transferred for the following reasons:—

(1) The non-provincial authorities have not enough funds to manage their institutions properly.

(2) Their choice of officers is restricted for lack of funds and also transfers are not easy even when necessary and desirable.

(3) Dual control always leads to inefficiency.

(c) (i) The agriculturists, at present, are unable to make full use of the veterinary dispensaries and I suggest the following remedies:—

(1) The number of dispensaries should be increased so that they may be within the easy reach of the ryots.

(2) All officers of Agricultural, Veterinary and Co-operative Departments should make known to the ryots the existence and value of the dispensaries.

(ii) Full use is not and cannot be made of touring dispensaries because—

(1) It takes time for the Veterinary Assistant to make known his arrival in the villages.

(2) He does not stay long enough in any one village to successfully treat all the animals that may be brought to him and if he does it will take years for him to go round all the villages in his jurisdiction.

(d) The following are the obstacles met with in dealing with contagious diseases:—

(1) Delay in reporting the outbreaks of contagious diseases due to the ignorance and indifference on the part of the ryots as well as the village officers.

(2) Even when the Veterinary Assistant visits the villages the ryots do not easily bring their cattle for treatment, because firstly the ordinary inoculation, though it involves the stoppage of work only for a day, does not give immunity from attack for more than 10 or 12 days and secondly the serum simultaneous inoculation, though said to give more or less permanent immunity, disables the cattle for work for about 15 or 20 days, which the ryot finds highly inconvenient.

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(3) There are not enough Assistants to attend to the work, as for example, when there was a severe outbreak of rinderpest in the western taluks of Bellary during the last summer.

There are already the necessary legislative provisions but they cannot be enforced with regard to:—

(1) Segregation, for want of money for sheds and separate staff including Veterinary Assistants to attend to the segregated animals.

(2) Disposal of carcasses, for lack of provision to meet burial charges.

(3) Prohibition of movements of animals exposed to infection for want of staff to guard all exits (which are numerous) from the village and owing to the inconvenience to the ryots who have to attend to their cultivation in time and also secure their foodstuffs, etc., from the neighbouring markets and villages.

(*e*) There is no difficulty at present so far as I know as regards the supply of serum.

(*f*) *Vide* answer (*d*) (2) above and also lack of propaganda. No fee is charged from 1925 for serum alone method of inoculation and from 1926 for serum simultaneous inoculation.

(*g*) Provision for further facilities for research into animal diseases is desirable.

(*ii*) I advocate the extension of Provincial Veterinary Research.

(*h*) Special investigations should be conducted by research officers in the Province.

(*i*) I know of no advantages resulting from the appointment of a Superior Veterinary Officer with the Government of India which cannot otherwise be secured. A periodical conference of the provincial expert officers must be sufficient on the necessary interchange of ideas and the laying out of programmes of future work as in the case of Board of Agriculture.

QUESTION 16.—ANIMAL HUSBANDRY.—(*a*) (*i*) Yes. So far as the red soil areas of Bellary district are concerned. It wuold not do to depend on imported cattle always. I suggest that Government should have a breeding station for the improvement of the indigenous stock and distribution by sale or otherwise of suitable bulls to the villagers. For example, one such station might be established near the reserve in Kudligi taluk, Bellary district, the control of which the Government have decided to retain in their hands. The best local breeds should be crossed with the most suitable breeds from elsewhere in order to produce a breed superior to the local ones.

(*ii*) I believe there is great scope for improving the milk-buffalo by selection and cross-breeding with Delhi and other better breeds.

(*b*) Promiscuous breeding and insufficiency of pasture land are to a considerable extent responsible for cattle deterioration.

Provision of manures such as oil-cakes, bones, rock phosphate at low rates might help the ryot to reduce the number of extra cattle kept mainly for manure.

(*c*) In red soil areas, April, May, June and subsequent months also if monsoon is delayed, show a shortage of fodder. So far as black cotton soils are concerned there will be no dearth of fodder from season to season if the monsoons are regular. It is during May and June that scarcity is most felt.

(*d*) Supply of fodder can be improved by:

(*i*) Helping the ryots to reduce their useless cattle by providing cheap manures.

(*ii*) Separation of pasture-lands for cattle and sheep.

(*iii*) Allowing grass to grow sufficiently on pasture-lands before animals are let in.

(*iv*) Grazing by rotation of pastures.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(a) The average dry land farmer, both in the red soil and black cotton soil areas, holds about 15 acres of land. The red soil farmer is idle for about 250 days in the year. Before the period of seed-bed preparation and sowing at the times of the monsoon rains he is idle for the long period of three months at a stretch. Again after the first intercultivation and weeding somewhere about the 1st of August, he is again idle for a period of about three months. The black cotton soil farmer is idle for about 180 days in the year. In the years when he ploughs his land deep he is idle for about 60 days after the middle of March. During the years when he does not plough his land deep he is idle for about 5 months continuously. After the first intercultivation he is idle for about two months and a half. During the slack season, the cultivator goes to haul grain and other commercial products if there is an opportunity. He goes to work in the wet land areas if they are near by. If forced to stay home he busies himself by making ropes for his needs and doing other sundry things.

(b) If the Government and the Local Boards can carry on road repairs, tank repairs, village improvements, provision of water-supply, means of communication, sanitary arrangements, etc., enough work can be supplied to the cultivator during the slack season.

If the water-supply can be increased by bore wells, the dry land cultivator can keep himself busy growing garden crops, raising poultry and producing milk and other dairy products.

(c) Lack of sufficient water is the chief obstacle in the way of either starting or expanding most of the industries mentioned.

(d) Yes, with regard to sugar making, utilisation of cotton seeds for felt, etc., and rice straw for paper.

(h) Formation of village panchayats who should be given a certain amount of the revenue from the village.

QUESTION 19.—FORESTS.—(a) If anything, forests are overgrazed.

(b) Disafforestation has been going on, but no afforestation; trees such as casuarina, *babul*, *tugli*, and others, should be planted in forest reserves, wherever possible.

(f) Yes, to some extent. Grass should be allowed to grow to a certain height before cattle are allowed to graze. The Forest Panchayats must be encouraged to regulate the number of cattle permitted to graze in a given area with reference to the grazing capacity of the forests concerned.

QUESTION 20.—MARKETING.—(b) The intermediaries cannot be said to deal fairly with ryots with whom they transact business. Wrong measures and false weights are often used to the detriment of the producer of raw material. Establishment of co-operative sale and loan societies may reduce this evil.

(c) The quality of jaggery is to be improved. For this, the Department of Agriculture should bestow their attention on devising and popularising improved furnace and pan.

(d) Yes. Daily prices of jaggery, ground-nut, cotton, rice *jowari*, and *dal* in the chief market centres ought to be made available for ryots. Information regarding increase or decrease in the area of sugarcane, cotton and other important industrial crops and estimates of their probable yield ought to be made available for ryots.

Information regarding complaints as to Indian products must be gathered so as to enable the cultivators to guard against their recurrence.

QUESTION 23.—GENERAL EDUCATION.—(b) (i) I suggest that an educated Indian farmer be deputed to study the systems of education obtaining in other countries and see if they cannot be adopted to suit Indian conditions.

(iii) Only a small proportion of boys in rural primary schools pass through the fourth class, because children are needed for work in the fields.

QUESTION 24.—ATTRACTING CAPITAL.—(a) Agriculture as a profession does not pay at present. So no capitalist will invest his money in agricultural operations although large amounts are being invested in land since land is a safe investment for them.

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(*b*) Non-cultivating owner leases the land and gets from his lessee all he can get, and he is not interested in the further improvement of his land as he does not expect any further increase in his lease amount.

The cultivating owner is often too poor to improve his land, and, in fact, he is obliged to part with it in the end. The following figures from the Census Reports will show how the cultivating landowner is giving way to non-cultivating landowner and non-cultivating tenant in my district:—

	1901.	1921.
Non-cultivating landowners	13,108	35,920
Non-cultivating tenants	256	28,298
Cultivating tenants	43,655	113,168
Cultivating landowners	451,035	315,949

QUESTION 25.—WELFARE OF RURAL POPULATION.—(*a*) The general well-being and prosperity of rural population can be promoted by the formation of village panchayats and also by the adoption of the suggestion made in answers to questions 17 (b), 10 (b), 14 (b), 8, 5 and 1 above.

(*b*) There ought to be economic surveys which would give us some idea about the condition of the rural population.

The economic enquiries should be directed to ascertain:—

(1) whether there has been an increase or decrease in population with causes therefor,

(2) changes in the number and value of *pattas*,

(3) variation in the extent under different crops,

(4) irrigation sources and their condition.

(5) general condition of labourers,

(6) spread of literacy among the people,

(7) average income from land, after deducting cultivation expenses,

(8) variation in the wages and prices of articles needed for village life,

(9) indebtedness of royts, and

(10) extent and character of litigation in the village.

(*c*) My study of the Government statistics regarding cultivation in the Bellary district has confirmed my impression that agriculture is by no means the paying concern which it is represented to be in the Settlement Reports.

QUESTION 26.—STATISTICS.—I believe there is a consistent decline in the yield per acre of agricultural produce. The decennial reports of Hospet taluk, Bellary district, show that the yield of paddy per acre has declined from 20 bushels in 1891-1900 to 15 in 1901-1910, and to 13 in 1911-20. (A bushel is taken to be equivalent to 60 seers, each seer weighing 85 tolas or about 2 lbs.) Between 1891-1917 (27 years), I found that over 200 crop experiments were made on dry lands, and their results showed that there was a decrease in the yield by 38 per cent when compared with that adopted in the Settlement Report of 1891 for fixing the assessment. The decrease in yield becomes all the more striking when it is borne in mind that the fields selected for such experiments are generally superior to the average fields. This has been adverted to by more than one Commissioner of the Madras Board of Revenue. Mr. Atkinson in B. P. No. 225 of 1907, dated 27th June 1907, has remarked: "It is apparent that the land selected in many cases was superior to the average." Mr. Parsons has made similar remarks in his report embodied in G. O. No. 2619, dated 2nd September 1912. And Sir Frederick Nicholson, in his report embodied in G. O. No. 2687, dated 31st August 1917, remarked that the land chosen for experiment was largely superior to the general average and inevitably so when the situation of the poorer soils is concerned.

So I suggest that really average fields should be selected for estimating the outturns from year to year and effective measures taken to arrest the decline in the yield if not to increase the yield.

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Oral Evidence.

16765. *The Chairman:* Mr. Ranganatha Mudaliyar. you are a Member of the Legislative Council?—Yes.

16766. You have put in a note?—Yes.

16767. Do you desire to make any general statement, in addition to the note of evidence which is before the Commission?—I do not want to make any general statement. I think my note conveys mainly the things I wanted to place before the Commission, but I am ready to explain anything on which you want further informtaion.

16768. Thank you very much. On page 698 of your note, you give us your ideas of how modern scientific knowledge may be brought to bear in improving the indigenous and empirical system of agriculture?—Yes.

16769. I want to ask you whether it is within your knowledge that European systems of agriculture, and certainly British systems of agriculture, originally of course entirely empiricial, were just as conservative and, in my judgment, more conservative and less receptive of the earlier contributions that science was prepared to make than is apparently the case in India?—I do not know much about it. But this I do feel to be the case, namely, that so far as my knowledge of the working of the Agricultural Department goes, they have not been able to suggest very many improvements on the indigenous system of agriculture.. I think possibly they made the mistake of introducing wholesale foreign systems of agriculture, without trying to adapt them to the conditions in India. I think the proper course is to build up our agriculture from our point of view, basing it on our present practice.

16770. How about their contribution in the way of improving the varieties of cotton? Do you think that is a satisfactory contribution?—I have explained that. For example, I find they have provided better seed, which has taken kindly to some soils, but at the same time other seeds have not taken kindly. You must try to improve agriculture from the Indian point of view, basing it on Indian conditions.

16771. Would you agree that, so far as this Presidency goes, one of the most material improvements that has been introduced as a result of the Agricultural Department's activities is the practice of single seedlings?—I think that had been in vogue in certain parts of the Presidency already; what the Agricultural Department has done is to spread that knowledge to other parts.

16772. It is just an example of what you desire to put forward, namely, that they should look about and make the best of the empirical system, and bring modern science to bear in improving that?—I may say the same thing with regard to deep ploughing. It was in vogue in certain parts, other parts did not know about it; they found it useful in some places, and they tried to introduce it in other parts if possible and practicable.

16773. You have something of a note of disappointment in your memorandum when you say that the experiments of the Millet Specialist have not shown so far any encouraging results. Is it within your knowledge how long those experiments were carried out?—I know, because I myself attended the Finance Committee meetings when this expert was appointed. I know that the appointment was for a short period, but even for the short period it was in operation I did expect something better, but nothing encouraging has come so far. I am prepared to admit that perhaps I expected too much, considering the progress hitherto made.

16774. Not only that, but you have been a little hard on the Specialist in question?—It is not so at all; I rather think it was due to the fact, that unfortunately for him a place was selected which was not the right sort of place at which to carry out the experiment. I do not think he is to blame at all; I rather think that the climatic conditions of the place at which those experiments were carried out were against him.

16775. Have you any scientific or technical knowledge yourself?—No.

16776. Under the heading of 'Administration,' on page 699 of your note, you are complaining about the inadequacy of village communications. I wanted to know from you whether, in your experience, the roads have deteriorated within the last 10 or 15 years, or are they about the same as they were before?—The village communications have certainly deteriorated, and they continue to deteriorate.

16777. How do you account for it?—Because there is nobody at all to take care of these tracts. For example, suppose water flows down these village roads, there is nobody to rectify the damage done to them, so that progressive damage is being done to these roads, and never an attempt is made to put that right.

16778. What about the District Boards? How do you think they are working in relation to their responsibility as to roads?—Most of the boards are handicapped for want of funds, and they are not able to work satisfactorily at all.

16779. In the matter of transport by railway and steamer you say on page 699, "The charges for transport by railways and steamers of manures, livestock and agricultural produce and implements should be fixed at a minimum." Does that mean that you think they could be reduced?—I think so, for this reason: there was a complaint in the South of India that there was great difficulty felt for manure. I think the railway people reduced their freight charges, but I do not know whether they did it at a loss or whether they could afford to do so.

16780. Of course, one has to be careful, when blessings come in limited quantities, not to be ungrateful; otherwise, one may not get anything?—In a way, it has encouraged me to make a bigger request.

16781. Have you any close, personal experience of the co-operative movement?—I cannot say I have very much.

16782. These are your general impressions?—My general impression is that it requires thorough overhauling.

16783. You do not feel satisfied with it?—I am not satisfied with its working.

That is probably as far as you wish to go on the point.

16784. When you are talking about placing loans within the limits of the borrowing capacity of the ryot on easy rates of interest, the complete liquidation of his existing debts, and his right to borrow as and when he needs financing, are you suggesting there that the general body of the taxpayers should come forward and relieve the individual cultivator's position?—No, I do not suggest that the general tax-payer should altogether bear the burden of relieving the agriculturist. What I do suggest is that money should be made available for the uplift of these people. You can recover the money back from them; I would have an arrangement by which, while you advance money to these people, you could recover it in easy instalments from the people concerned.

16785. Of course, you recognise, I am sure, as a person familiar with these matters, that punctual repayment is the essence of any system which is going to advance money at a substantially lower rate of interest?—That is why I want to make repayment sure and certain. As at present, ten to one, there is difficulty of recovering your loan, because you make it difficult for him to live.

16786. Do you not think there is the danger, if you place easy credit at his disposal, that he might use that credit more to borrow further funds than to liquidate prior debts?—I have tried to guard against it; I make his credit only available with regard to one source, so that there is no danger of his over-borrowing.

16787. You give, under the heading of 'Irrigation,' particulars which, in your view, go to show that, taking into consideration the large expenditure as a result of famines, schemes which on their face appear unremunerative

are in fact sound investments from the public point of view?—I think there can be no doubt in the matter. Latterly Government have conceded that point. If they take into account all the losses they are put to, which they can aviod by these protective works, they are bound to gain in the long-run.

16788. I must ask you for the authority behind these figures that you have cited and for the technical facts which you have given. Where were these figures taken from?—Will you kindly refer me to the page?

16789. Page 700 of your memorandum?—The first quotation is from Col. Henderson's report saying that the district is very well provided with facilities for irrigation. "It contains within itself all the essential elements of prosperity. The rivers and streams which intersect it might be taken advantage of to a much larger extent than now for the supply of works of irrigation."

16790. You give your authority there?—Yes.

16791. Is the Collector's report a published report?—The Collector's report was published in the District Gazeteer, and is a Government document.

16792. What was the date of that report?—It is in the District Manual of 1872. It was published some years ago, but the facts are as true now as they were then.

16793. I think your story there speaks for itself. I just wanted to be assured of the source from which you have drawn your quotations. Then on page 701 you say: "Bore-wells might be tried in selected villages and water lifted and supplied to ryots at cost price. To reduce the cost of water for the ryot the number of wells in any one locality must be large enough to justify the appointment of a full time mechanic. Want of understanding and absence of imagination on the part of the Government, I regret to say, are the chief obstacles to the extension of irrigation in my district." Too much imagination on the part of Government is rather apt to lead to bankruptcy on the part of the State. But are you quite satisfied that water is available? Has there been no survey?—I do not think any survey has been made.

16794. Do you speak with confidence on that point?—That is my impression; I cannot say with greater certainty.

16795. You would agree that it would of course be a very necessary and obviously prudent preliminary?—Yes, we can try boring in some places and see at what depth we can find water.

16796. Boring does not cost much?—The charges are not much; at any rate they are not very heavy, I should say. May I, with reference to the remarks about lack of imagination on the part of the Government, invite your attention to this. In my district owing to floods, thousands of tanks breached and spring channels were silted up. The Government in those days issued a rule that only those sources of irrigation should be restored the cost of which could be recovered within four years from its revenue. In other words, they would not invest money on the restoration of these ruined tanks, river channels and the rest unless they were sure of 25 per cent. return on the capital spent thereon.

16797. They are regarded as protective works?—Not only protective; but I say that the return calculated for the sum invested, *i.e.*, 25 per cent. is a thing unheard of. I have got authority to say that. I am speaking of Bellary district.

16798. *The Raja of Parlakimedi:* What do the maintenance charges come to? Have you calculated?—The maintenance charges would come to the same amount as before. There was a breach, and money had to be spent on that; but they wanted to know if the revenue from those sources amounted to 25 per cent. so that the money spent could be recovered within four years.

16799. Do you not think that the rise in the pay of the engineering staff is to a certain extent responsible for it?—I am sorry I have not made myself clear. It was not with reference to the maintenance charges or the increase of staff that such a rule was made. There were a large number of sources of irrigation in the district. They were works constructed by the predecessors

of the Government. An act of God came to pass; there was a flood and tanks and channels were breached. In the normal course of things one would expect that these would be restored, if the cost were reasonable. But the standard which the Government of the day, fixed was that the amount incurred on the restoration must be recouped within four years from the revenue from that tank or source of irrigation. I say that that was too rigid a standard to apply, especially to a tract like mine which lies in the famine zone.

16800. *Dewan Bahadur Raghavayya:* When was that rule made?—The rule was made long ago and we have suffered a lot.

16801. When was it abrogated?—I do not know if it was abrogated at all.

16802. *The Chairman:* On page 702 in answer to sub-section (*b*), you say that the "fraudulent adulteration of fertilisers can be prevented by educating the farmers by legislation" and by other measures. Have you any experience of fraudulent adulteration of fertilisers?—I have not had direct experience of it; but still, looking at it from my own experience, it is just possible that the vendors try to make more profit out of the commodity they deal in by adulteration. So I suggest that in order to make these experiments sure and certain and to prevent the ryot from saying afterwards "Oh, the manure we used did not prove so useful as it was represented to be," we must safeguard against adulteration.

The Commission then adjourned till 10-30 A.M. on Thursday, the 25th November, 1926.

Thursday, November 25th, 1926.

MADRAS.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E., C.B.

Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.

Sir JAMES MACKENNA, Kt., C.I.E., I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja SRI KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU.
Rao Bahadur B. MUNISWAMI NAYUDU GARU. } (*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH. } (*Joint Secretaries.*)

Mr. A. RANGANATHA MUDALIYAR.

Further Oral Evidence.

16803. *The Chairman:* Before we adjourned yesterday we were discussing the general question of the use of fertilisers and I wanted to ask you whether you ever had experience of such adulteration of fertilisers. Have you ever come across a case?—No.

16804. On page 703 under the heading "Agricultural Implements," you talk about the possibility of having to subsidise competent Indian firms. Why should you subsidise these firms? Why, if the market is there and the commercial capacity is available, should these firms not capture the market without subsidy?—May I say that I have not said that Indian firms alone should be subsidised. Coming to the other point; I know, for example, taking the case of iron ploughs, the demand was by no means so much when it was first introduced as it is now. We are dealing with a conservative class of people and we have to take some special steps to devise instruments perhaps even before there is an acute demand for them and popularise them in the interests of the people.

16805. You contemplate subsidising out of the general funds of the Presidency any firm which could supply a suitable agricultural implement, is that your idea?—If there is a competent firm willing to experiment and devise an improved implement for the country, why should we not give them a certain amount?

16806. Would you confine that subsidy to the experimental stage of their work?—That is all, I think.

16807. On page 704, section (*b*), sub-section (*iii*), you say "I do advocate the transfer of control to the provincial authority and even the few that are

not under the Provincial authority at present might as well be transferred for the following reasons." You think that all these veterinary establishments should be under the direct control of the Provincial Veterinary Service, is that your idea?—Yes; my point is they should be all under one control; and, because the vast majority of them are already under the control of the provincial authority, I suggest that the few that are not now so might be transferred to the provincial control.

16808. You want the Presidency Veterinary Department itself placed under the Director of Agriculture; is that your idea?—That is what I have suggested for the reasons mentioned there.

16809. I do not know whether you would like to say any more upon that point. Are you concerned with the question of co-ordinating the work of the various branches or with what?—That is what I feel. There are a number of stations, for example, under the control of the Agricultural Department that require a lot of veterinary assistance as well, and outbreaks in the mofussil stations come more easily and more early to the knowledge of the agricultural people than perhaps to the Veterinary Assistants who are stationed far away. For these reasons I think it would lead to a greater co-ordination if the departmental control is unified.

16810. On page 705, as part of your answer to the general question on Animal Husbandry, you think "there is great scope for improving the milk-buffalo by selection and cross-breeding with Delhi and other better breeds." Do you think that if the milk yield of the cow could be raised by the same process of natural selection and cross-breeding the cow might take the place of the buffalo?—I doubt whether the cow can take the place of the buffalo in regard to the quantity of milk.

16811. Have you experience of the work of Forest Panchayats?—I have.

16812. How do you think they are working?—For the short period they have been in operation I must say they are working fairly satisfactorily but I do feel that there is very great room for improvement.

16813. In the control and management of forests?—Yes, in the control and management of forests.

16814. For the purpose of grazing and fuel?—Yes; I feel so.

16815. Under the heading "Marketing" have you considered the advisability of creating control of the markets, quite apart from co-operative selling?—I have not bestowed any attention to that. I am sorry I cannot say anything on it.

16816. You make a very definite statement in answer to our question 24 under the heading Attracting Capital. You say "Agriculture as a profession does not pay at present." Do you mean that the cultivator is not making money?—That is so.

16817. Does rent-collecting pay?—You mean the non-cultivating landlord?

16818. As against cultivating?—Yes; I think it does.

16819. In answer to our question 26 on Statistics you give some figures showing the slowly declining yield per acre of a certain class of land with which you are familiar?—Yes.

16820. How do you account for that?—I think the ryot is not able to maintain the land in its natural fertility for long; he constantly keeps it under cultivation but does not take any steps to make good the loss of fertility due to the continual cultivation.

16821. But do you think that 30 years ago the ryot used to put more fertilisers or manures into the soil?—For one thing, he had not under cultivation the same extent of land as he has now; there was a choice of areas and probably he kept the land fallow for some time.

16822. Do you tell the Commission that in 1891 and the following decade these lands were in fact cultivated on a scheme which involved fallow?—Considering that the extent then under cultivation was not so much as it is now. I have to presume that the ryot had the pick of land to cultivate.

16823. But you are not certain on that point?—No; I cannot be more precise.

16824. *The Raja of Parlakimedi:* In your statement you say that there is not much advantage to be gained by having a Central Research Board. Do you not think for common crops it will be better to have a Central Research Board?—If there are any points which are of a fundamental character the results of which can be applied equally to all Provinces, then a central institute may be necessary. But in regard to cultivation we are concerned mainly with local problems. For example, take the case of the Ceded Districts. Their climatic conditions are of a peculiar character. Suppose the Government want to improve the millet of those areas. I think an institute in those areas, with experiments conducted on those soils, is likely to yield more fruitful results than an institute with experiments conducted elsewhere. The Chairman was good enough to refer to that point yesterday and I said that the experiments made on millet were not satisfactory; I think it is due to the fact that the experiments are conducted in Coimbatore in a soil which is not of the same character as that of the Ceded Districts. So I say that in regard to this matter it is better that we conduct these experiments in Provinces with special reference to the conditions prevailing there.

16825. But, given a measure of co-operation and co-ordination between the provincial heads of the departments, or between the people concerned, and the Agricultural Department, do you not think the necessary information could be carried to that body?—I think that result can be equally achieved by a periodical meeting of all the departmental heads as is perhaps now done in the case of Agricultural Boards. These people may meet from time to time and exchange their ideas and see if what is strikingly successful in one place might not be adopted in another place where it has not been tried.

16826. So you are of opinion that with that sort of co-operation a central body can be worked?—With that sort of co-operation a central body might be superfluous.

16827. But, of course, you are aware that the more we have of these research bodies spread over the country, the more machinery and more expenditure it means, and so on; so in order to save superfluous expenditure, I think that with conferences in different parts of India and with the research body at a central place, not much difficulty will be felt in carrying out the necessary improvements?—I am not at all against the multiplying of institutes. In fact, even for each Province I am not satisfied with one single institute. If it is a matter of cost, as you put it, I leave it to the Government to calculate the cost.

16828. Are you not convinced that it means cost?—I think you suggested that the Central Institute would be less costly than the system of periodical conferences I suggested; I say that is a matter for calculation.

16829. At any rate it means a body of men with separate sets of apparatus and buildings and all that; it certainly must be more costly?—That is what I mean; a Central Institute is likely to be more costly.

16830. No; if you have several institutions spread over each area it will cost more?—It is no good starting an institute to serve the whole country and getting results which cannot be applied everywhere. It is far better to restrict ourselves and try to produce tangible results with reference to that area at least.

16831. Have you been to the agricultural farm at Coimbatore?—No.

16832. Have you ever discussed matters with the Director of Agriculture of this Province, what research is being carried on with regard to paddy, for instance?—I have discussed the matter, not with the Director of Agriculture, perhaps, but with many people who have direct knowledge of the working of the farm, both officials and non-officials.

16833. You have not gone to the farm?—No. I never said I had gone to the Coimbatore farm.

16834. I think a visit would be very informing?—I dare say it undoubtedly would be.

Mr. A. Ranganatha Mudaliyar.

16835. You suggest just below that paragraph that selection should be more or less on national grounds?—I mean on grounds which are calculated to yield the best results to the country.

16836. Do you not think that that purpose would be served better if you stick to efficiency irrespective of whatever nationality the men may be?—That is exactly what I am trying to get; I do want efficient people who will remain in the country and give us the benefit of their experience even after they retire from the service.

16837. Of course, preference should be given to Indians if they are available; but there must be times when we must be prepared to take efficient people of whatever nationality?—I am quite at one with you in regard to that matter; I do want efficient people to train Indians and put them on their feet. But I have found, as I have tried to explain in my note, that the people who came here did not make this the place of their work. If I go into the figures I can make my point. I say with great regret that they did not stay here. I can give instances of very good officers—(I do not blame them, I would do the same in their place)—very good officers who gained experience in this country, but went away when they got an opening elsewhere.

16838. But they are prepared to train their assistants to carry on their work; they do train them?—That is the difficulty. If they had done so they would have been replaced by their assistants.

16839. The work on sugarcane is being carried on by an Indian who was trained by Dr. Barber?—I am not concerned with individual cases.

16840. You say on page 698 of your statement, "The administrative machinery on the land revenue side is fairly well organised and does not need any considerable expansion. A good part of the revenue due to increase of assessment as a result of periodical resettlements and of the remission in the provincial contribution should be devoted to the amelioration of the conditions of the rural population." I think that purpose can only be served if you effect retrenchment in staff as well as in other expenditure?—There are two ways by which more money can be found; it may be by expansion of revenue or by curtailment of expenditure, or the two may be simultaneously in operation.

16841. Do you think that enhancement of taxation takes place because we have to maintain a machinery which is found necessary, and because we pay the staff at certain rates with a view to keep them contented? How can you then make a saving?—If money is forthcoming there is always a way of expenditure for it; there is no question about that.

16842. It is not for the fun of the thing, is it, that departments are created?—May I explain myself? Now, there is resettlement going on in district after district, and that does bring in a considerable amount of revenue to the Presidency. Who contributes those increased revenues? It is the ryot. I think on the ground of common fairness that at least a part of the revenue so contributed by the ryot should go directly for the improvement of his condition: that is my point. And I think it can be afforded, because the departments already in vogue have been so far organised and perfected that there is no longer the need for proportionate expansion in their case as in the case of the new departments.

16843. Do you think there is sufficient co-operation from the people of the country?—I believe there is that co-operation, only they have to be educated to that. The men are poor and they cannot afford to make experiments. If only you convince them of the utility of the things, no one is quicker than they to take to them. But they cannot afford to take risks; that is the point.

16844. May I know what propaganda is being carried on for the benefit of the agriculturists by private bodies?—I am very sorry to say there is not much of it.

16845. There you are?—That is my point, and that is why I am before the Commission.

16846. It is for the country to co-operate. Of course there is the department and Government are trying to do as much as possible; but unless we, the

people of the country, also take interest in such matters and create agencies to carry these improvements to the doors of the people, it will be very difficult for any Government to improve matters?—Undoubtedly. I am free to confess that there is a great deal of improvement in the attitude of the Government recently, but when it goes further and the Government is of the people, for the people and by the people there will no longer be this question at all.

16847. Then, about the machinery that has been created by the department, even on that point your doubts would have been very largely cleared up if you had paid a visit to the Coimbatore farm or had a talk with the Director of Agriculture?—It must not be understood, if I may venture to say so, that I am making these observations without trying to satisfy myself as to the justifiableness thereof. If I have not seen a particular officer, I do not want you to deduce from that that I am hasty in my observations.

16848. I do not come to that conclusion at all. You say they have not done anything practical?—I have not said so absolutely; I have recognised the good they have done; I am grateful for whatever they have done.

16849. In the machinery department improvements have, of course, been effected on the indigenous methods of cultivation?—What are those?

16850. Ploughs, harrows and seed-drill monsoon ploughs, Sind ploughs?—By whom were they manufactured?

16851. I do not mean they manufactured them or invented them?—That is the point.

16852. Anybody can manufacture the harrow?—When there is a special department for that work, one does expect a little more.

16853. When they come to the Legislative Council for funds, there is a tremendous lot of criticism; they complain of enhancement of expenditure?—I am one of those who have been finding fault with the Government for not utilising the money given to them. I do not think it has been due merely to want of money. I want to be quite fair in this matter.

16854. You must take everything into consideration?—I have tried to be as fair as I could be, and I still am of that opinion.

16855. What prevents people themselves from inventing improved ploughs, harrows and seed-drills?—Lack of initiative to which many things have contributed.

16856. Initiative in what?—In the matter of inventing new things.

16857. Is there no initiative to further improve upon the plough and the harrow?—In this connection, I would like to say one thing. I have always had high hopes of the rich proprietors of the country; I think it is up to them to lead the country, because they have a large extent of property and considerable means at their disposal; if they take this question into their hands, much good will result; it is no good expecting these poor people to do it.

16858. They are taking it up very largely?—It should be more; the consummation would be much nearer if they took more interest.

16859. Take for instance education. Unfortunately I have to mention the part I myself took. Right from Ganjam to Godavari you will find the zamindars devoting their time to the public interests?—I am very glad you refer to yourself. It will make other zamindars follow your example.

16860. Do not talk of Parlakimedi. Take the educated gentlemen and people of standing in the industrial walks of life. Do you not think that they ought to take their share in the improvement of society?—I do.

16861. How many agricultural farms are there?—Run by private individuals?

16862. Yes?—To my regret I do not know of any.

16863. On page 698, you say, " Small areas of land on private fields might be taken on lease and improved methods demonstrated thereon at Government expense." That means practically you go back to demonstration being carried on by the department on their own farms?—On a very much less expensive scale than they are doing at present.

16864. The expense is not the point I am referring to. To convince the ryot it is no use carrying on demonstration outside his own area; you must carry on the demonstration in his own field through him; that has been my experience?—I quite agree.

16865. Then, why do you prefer demonstration carried out on land leased at Government expense?—When you cannot get private people to experiment, then you can take land on lease; but wherever private people are forthcoming, certainly I should not ask Government to take land on lease.

16866. Do you not think that this may be put as an alternative?—I believe I have done so.

16867. But it does not serve any purpose?—I have been encouraging people in my district to carry on the experiments of the Agricultural Department under the supervision of Demonstrators. That is going on, and I say with good results also.

16868. You can encourage that sort of thing in other areas?—My point is this. Say, a demonstration is being carried on in Kalahasti. It is perfectly clear that only people who live within a radius of ten miles from that place may be benefited by it. But I want this to be carried to the people who live more than ten miles away from that place. If there is a private individual there ready to follow the advice and carry on a demonstration there, well and good. If not, then let the Government come to the rescue, take a small plot of land on lease, say, 2 acres, and show to the ryot what can be done by improved methods.

16869. Excuse my saying so, but with more practical experience I do not think you will encourage it because the ryots will not follow it, and unless they do it themselves, it is no good. Their answer is "You have got so many facilities, you have got money, and you can carry on such experiments, but it is beyond our reach."?—Undoubtedly, I would prefer the ryot to do it, under proper direction, but failing that, I have suggested the second best thing.

16870. If they go round and talk to them, it has a good effect?—Yes.

16871. Would it not be a good thing if bulletins in their own vernaculars were circulated among the people?—Yes, but with the supreme illiteracy of the people, it does not go far enough; nothing but ocular demonstration would convince them.

16872. That is also one of the agencies which might be employed?—Yes.

16873. On page 699 of your memorandum you say, "Short courses of lectures for farmers at one or other of the agricultural farms; two or three ryots from each taluk might even be helped by railway fare to attend these lectures." Do you not think you should also take into consideration from what part those ryots come from, and also see under what conditions they carry on their methods of cultivation?—Surely, when we are going to help the man to go there, we should certainly choose the man who will derive the utmost possible benefit by going; it is no good having any one who offers himself.

16874. It is no good getting a ryot outside the permanent estates or from ryotwari areas, unless you are sure that he holds a long period lease?—Yes.

16875. So, when such instances have to be dealt with, you would make that distinction?—We shall take all these factors into consideration when choosing the people to go and attend the course of lectures, if they do not go there at their own cost.

16876. Further on you say, "I doubt whether an addition to the scientific staff of the Government of India would result in indirect advantages to the Province." Will you please put it more clearly?—I think that point has been discussed; when you, Raja Sahib, suggested whether a Central Institute might not be had, we went into that question.

16877. *Mr. Calvert:* Have you been to Pusa?—No, I hope to have that opportunity.

16878. *Professor Gangulee:* You just now said that you had no opportunity to go to Pusa; did you seek an opportunity, did you create one?—If it is a question of funds, I am free to confess to you that I could not afford it.

16879. Is it a long journey? On your way to Delhi, you could have gone there?—No.

16880. Are you a landholder?—There is some land registered in my name, but I am not a farmer.

16881. I think you belong to the Theosophical Society?—I am a member of the Theosophical Society.

16882. Can you tell the Commission what success you have achieved in the efforts made by your Educational Trust in the direction of agricultural education?—They began it.

16883. When did they begin it?—In 1917, if I remember rightly.

16884. What happened to that scheme?—There was not sufficient response in the matter of money.

16885. Not sufficient response from the people?—There was not sufficient response in the matter of money.

16886. What about equipment?—Equipment they had, and it could have been improved if more funds were available.

16887. That farm, if I remember rightly was under a Dutch expert; was it not?—Yes, under Mr. Hindekoper.

16888. Both the farm and the curriculum, the teaching part, were under the care and charge of a Dutch expert?—Yes.

16889. And yet, you say in your memorandum "I am not for the employment of foreign agencies"?—It makes a world of difference, I should say. There was Mr. Hindekoper there, but his colleagues were all Indians, so that Mr. Hindekoper had always the benefit of his Indian assistants; I do not want to discriminate with respect to capacity and all that.

16890. Would you call him a foreign agency?—Yes.

16891. And yet you say that for agricultural research you would not have a foreign agency?—Mr. Hindekoper is no longer there.

16892. He gave the impetus?—That is my point; the impetus is no longer there.

16893. May I take it then that as soon as he left the place, the whole thing collapsed?—I am not quite sure about the dates and I cannot be positive about the matter, but I think he left in 1921.

16894. That is so. I think you have made a reference to the Millet Expert; you have not been to see his work?—No.

16895. Do you know the nature of the experiments he has been carrying out?—I admit that the appointment was for a period of short duration, 3 years or so, and I said that the results have not been encouraging, but I have said that it might be because the experiments were conducted in a soil not suited for the purpose.

16896. I have heard that answer already. I want to know whether you are aware of the type of experiments that have been done there, whether they were aiming at better cultivation, or better breeding, and so on?—The experiments were for better yield.

16897. Do you know how that work began, and who gave the money for it?—The Government gave it.

16898. You make comments on demonstration; have you ever attended any of the demonstration work?—Yes, sometimes I have.

16899. In which area?—In Kurnool district and Bellary.

16900. The Agricultural Demonstrator was demonstrating when you were present there?—Yes.

16901. What was your impression?—It was the usual kind of thing.

16902. What was the usual kind of thing?—Iron ploughs and so on.

16903. What was the Agricultural Demonstrator demonstrating?—He was demonstrating with regard to smut disease for example.

16904. What was he actually demonstrating on the day you attended this particular demonstration work?—If I remember aright, it was only deep ploughing.

16905. What kind of plough was he using?—An iron plough.

16906. You consider it is quite an improved plough?—From the way it has been taken to, it must be so.

16907. Then what happened? There was the field, and you saw a number of villagers round about; there was the iron plough, there was the Agricultural Demonstrator and you yourself; what happened then?—Some people would observe that the iron plough goes deeper than the country plough.

16908. Did you feel that the cultivators were impressed?—I think so; they were impressed.

16909. Were you impressed?—Yes.

16910. With regard to your view that the Meteorological Department is not rendering any service to the agriculturist, have you any suggestions to make in that connection?—Absolutely none.

16911. Do you know the nature of the data that the Meteorological Department collects?—No; all that I am concerned with is that they should make a proper forecast as to when the rains will begin and things like that, for the cultivator to be ready for his operations.

16912. Have you taken any part in the co-operative movement?—I have just begun to do so.

16913. How have you begun?—There is the District Federation in Bellary, and I have been chosen to work on that.

16914. Are you a co-operator yourself in any form or shape?—I do not know if taking a couple of shares means being a co-operator.

16915. What shares?—Shares of the society.

16916. What kind of society?—A credit society.

16917. Is that credit society in a village area?—It is in a town area.

16918. You say that more co-operative societies should be instituted, but you say you cannot give us any idea how. You have no definite suggestion to make except to say that the co-operative movement should expand; but you have not studied the problem?—I have been touring round the villages; I know the places where the societies are.

16919. But many people can tour without knowing the conditions?—I have been touring round and seeing the societies.

16920. Have you made a serious study of the problem of agricultural indebtedness?—Yes, to some extent I have.

16921. Can you give us any idea of the extent of such indebtedness in your district?—Yes, I think I can, from the figures published.

16922. From the Government figures?—Yes.

16923. Anything from your own observation?—I feel that indebtedness has increased.

16924. Could you supply the Commission with certain definite data with regard to the extent of such indebtedness?—I take it you ask me whether I have collected the figures with regard to what it was sometime ago and what it is now; I have done it in stray cases, but not in a systematic way to cover any particular area.

16925. From stray cases, you are under the impression that indebtedness is increasing?—So far as statistics are concerned I have collected them in some cases, and my general observation is fairly extensive; that view is confirmed by the Government records which at any rate need not be considered to favour one view more than another.

16926. Do I understand you aright that you have made a study of a particular area with regard to indebtedness?—Yes, in the town.

16927. We are concerned with the rural areas?—Sometimes I have tried to find out how they pay their assessments and things like that.

16928. It is a question of the extent of agricultural indebtedness?—That is why I have suggested that some attempt should be made to prepare such statistics.

16929. You state that you have made an enquiry in a certain area with regard to agricultural indebtedness; I want to know from you whether you can supply the Commission with any definite data?—No.

16930. You say, "Complete liquidation of all existing debts even by percentage payment by resort to legislation, if necessary." Can you explain, if you were Registrar of Co-operative Societies of this Presidency, how you would put this suggestion of yours into practice?—Even without the collection of definite statistics for an entire area, one can well be convinced of the indebtedness; that is my position. I know indebtedness is on the increase, in spite of the fact that I have no statistics of the sort required by you and I suggest that, in view of the fact that these people are indebted more perhaps than they are able to cope with, something must be done to start them with a clean slate. Now, how we shall do it is the question. Obviously, it is out of the question for them to repay, we must help them to start with a clean slate. So I suggest that we take into account all their assets and liabilities and see if we cannot pool resources and get the debts liquidated.

16931. But how?—For example, if the property is valued at Rs. 1,000 and his indebtedness is Rs. 2,000, I should say that it must be cleared for half the money; that is my point; it should be met by percentage payment. It may be drastic, but I know of no other way.

16932. I am afraid you have not studied finance carefully?—I have not.

16933. Have you any experience of the use of sulphate of ammonia?—Yes, in Hospet taluk it is used.

16934. Did you yourself use any quantity?—I am not a farmer.

16935. In what way have you come to know about it?—The ryots have been using it.

16936. You say the residual effect of this and other ammonium compounds should be carefully investigated. Are you here suggesting that the residual effect may be bad?—That is what one of the experts, a gentleman who has returned from America and who has been conducting these experiments, is not yet certain about.

16937. Did you yourself observe any residual effect?—It is too early to say.

16938. So, when you made this remark, you did not depend on your knowledge of chemistry?—I began by saying that I am not a scientist.

16939. So this remark has been suggested to you by a friend of yours?—Surely, as many other things have been.

16940. You ask the cultivators to stop the use of cowdung for fuel. Have you any definite suggestion as to how that could be done?—The only way I could think of is substitution of other fuel.

16941. How?—If a substitute is available. I do not know, it may be from the forest reserves; we can work them on a cheap method and procure fuel and supply it to the cultivators.

16942. On page 705, you make a suggestion that the supply of fodder can be improved first by helping ryots to reduce their useless cattle. That is a very desirable thing to do, but how?—I find that they are having a large number of cattle mainly for the purpose of manure. So I thought that, if they could have the manure from another source there would not be any necessity for them to keep such a large number of cattle on their hands, as they are doing now.

16943. *Mr. Calvert:* You say that you think a part of the increased income from land revenue should be devoted to the rural population. You know of course that in each succeeding settlement, the increase of revenue is less than the increase of prices of produce?—It is said to be less.

16944. So, the burden on the land is getting less and less per acre after each settlement?—I cannot quite say so.

16945. The cultivators have to sell less and less of their produce to pay revenue?—Yes, they have to sell less and less, but whether the proportion is the same to the net produce, I am not able to say. It is true that he sells less quantity, but whether it bears the same ratio to his produce I am not able to say.

16946. With decreasing burdens, you want increased amenities? You say that you are opposed to the curtailing of the credit of the ryot?—Yes, that is true in one way; that is to say, I do not want to impose such a restriction on the whole class of ryots.

16947. You would be in favour of restricting his credit for extravagant and wasteful purposes?—We cannot do that absolutely for the whole class of ryots. That is to say, we cannot say to a ryot 'you shall not go and borrow from X, Y or Z;' but if he comes to me for a loan, I then impose on him a condition that he can borrow from me only and from none else; in that way I would restrict his credit.

16948. I gather that in your opinion there is an excessive number of cattle in the Presidency?—Yes, in areas near to the forests.

16949. Can you suggest any means compatible with sentiment of keeping the number down?—I think it might be kept down if the demand made for the use of those forests were reduced. I shall try to elaborate my point. Some of these forests have been given over to Forest Panchayats. These forests when they were under the control of the Government were not giving revenue to the Government; more or less they were losing concerns. When they were handed over to the panchayats, a sum has been asked of those people; sometimes it is comparatively heavy. I suggest the imposition of that amount as rent from the people makes them let in perhaps more cattle than they need otherwise do, in order to enable them to make up the money demanded of them. That is one way. Probably if you reduce the rent for those forests, we may eventually be able to persuade the ryots to restrict the number of cattle. They will have less to pay then.

16950. *Dewan Bahadur Raghavayya:* Is not a grazing incidence fixed for each reserve, *i.e.*, so many cattle for so many acres, etc.?—That is what I object to; it must be left to the people.

16951. To Forest Panchayat officers in consultation with the people?—You know, in any argument between the Forest Panchayat officers and the people, who gains the upper hand.

16952. *Mr. Calvert:* From the figures supplied, I gather that a vast proportion of the cultivators of this Presidency are trying to live on three acres upwards. Can you suggest any means by which their prosperity and welfare can be improved?—No, except by the theory that the department should set out to make two blades of grass grow where one blade grows now.

16953. Three acres. Would not six acres mean still more prosperity?—I should say that by trying to improve the yield, by selection of seeds, by providing them with manure, by trying to economise their expenditure, by the introduction of machinery and things like that and in many other ways, you can bring about that result and probably find other avocations also for people.

I wish you success in your endeavours in your own district!

16954. *Mr. Kamat:* You are a public worker of some standing, are you not?—It depends on how you take it. I am trying to serve the people.

16955. You are a public worker?—Yes.

16956. You have been devoting some of your time to studying the needs of your countrymen and solving their difficulties if possible?—Yes.

16957. I suppose you are not in receipt of any Government salary?—No.

16958. And all this is purely voluntary and philanthropic work?—I am glad to say it is so.

16959. And even for the agriculturist, such non-officials like yourself are absolutely necessary?—Yes, very necessary and the more their number the better for the agriculturist.

16960. Yours is a problem of studying facts in the field, by working on local bodies like panchayats or Municipalities, by mixing with the people and coming in touch with them. You agree with that view?—Quite so.

16961. You were asked a question as to whether you had visited Pusa. May I know your impression whether even all the agricultural officers of this Government have visited Pusa?—I do not know.

16962. Can you say that?—I think not.

16963. *Professor Gangulee:* How do you know?—There are so many Demonstrators and other officers like that who have never been there. I know a Deputy Director has gone; there may be others who have not gone.

16964. *Mr. Kamat:* For the matter of that, you think even the officers in the Agricultural Department of the Government of India could not have, all of them, visited Pusa?—It is not likely, I must say, on the face of it.

16965. We were told yesterday here that in the co-operative societies they have enough capital, and could also get more capital, to run land mortgage banks. My question is with reference to the capital available in your Presidency and the state of private enterprise here. You make a suggestion somewhere that so far as expressing oil from oil-seeds is concerned, Government should take steps to demonstrate that something could be done. Is it your outlook that Government could do everything in such matters?—No, not everything, but they have to begin it if there is no other way of getting it done.

16966. If there is enough of capital available in this Presidency as we were told yesterday, I wonder why private enterprise is not coming forward to start an oil-mill?—I suppose it is due to want of knowledge on the part of those people and unwillingness to invest the money.

16967. In other Presidencies, Government have not started oil-mills. Why do you expect them to do it here?—I do not want them to do one thing or the other; but I suggest that these things can be done. If they can get private agencies to do them, they can do so. For example, the pencil factory was started by the Government and then they made it over to private enterprise. Aluminium, I think, was similarly first demonstrated by Government.

16968. What happened to it?—They gave it to a private agency afterwards.

16969. Take again another observation of yours about the improvement of agricultural implements. You acknowledge that in another Presidency private enterprise has done something, but you add that such firms should be encouraged by the Government, you mean by the Madras Government?—By any Government.

16970. In Bombay they are not encouraged by Government?—That was a proposition that I made on behalf of Government.

16971. I am just trying to get at the outlook of people in this Presidency. Is capital available in such overwhelming quantity?—It is not available in such overwhelming quantities.

16972. We were told by non-officials yesterday here, by the Chairman of the Provincial Co-operative Union, that any amount of capital was available and that capital was lying idle with him, that he could run more land mortgage banks?—In the co-operative societies there is a certain amount of capital lying idle, but they are finding it difficult to find an investment for it. I think it was based on that data.

16973. I want to ask you, as a public worker, why an outlet for that capital is not being found in the shape of private enterprise in the two directions which I cited?—Because they are not sure that those private enterprises would really prove remunerative. That is one thing: the second is perhaps that they have not the willingness or the ability to carry on the enterprise.

16974. I do want non-official agency to take up agricultural improvement work. Here are the two directions in which possibly a worker like you may

try to do something. I want to know what the difficulty is?—As I have said, the people concerned are not convinced that they can take it up as a profitable enterprise perhaps.

16975. *Rao Bahadur Muniswami Nayudu:* You are a member of the local body?—I was. I am not now.

16976. You have some experience of the working of the local bodies in your district?—Yes.

16977. You say that the communications are quite inadequate and they receive practically no attention?—I refer to village communications.

16978. Is it your opinion that there has been some default on the part of the local bodies or that the local bodies have not sufficient funds?—I have said they have no funds.

16979. Have you any suggestion to make with regard to improving these communications?—I think the formation of village panchayats is the only practical method, so far as I can see, of creating an agency to look after these communications.

16980. Once there are roads, the village panchayats may look after them; but do you think the village panchayats will take up the work of constructing new roads at great cost?—All of these village communications cannot be made into first class roads, second class roads and trunk roads; but such communications can be improved a good deal for traffic; I think the village panchayats, if constituted and helped in certain directions, can take up the work and gradually improve the communications.

16981. Do you think the village panchayats, if constituted, can do that without further taxation?—I suggest that a certain percentage of the money accruing from the village should be given over to the panchayats, so that a percentage of the total revenue may form a nucleus of the panchayat fund.

16982. *Sir Henry Lawrence:* You have had some administrative experience?—Yes.

16983. How long ago?—Till 1915.

16984. You make a suggestion about the indebtedness of the ryot, to the effect that the borrowing capacity of the ryot should be fixed in advance subject to modification from time to time?—Yes.

16985. I understand you envisage a state of things in which the ryot will borrow all the capital he needs from Government for all purposes?—That is so, for all purposes.

16986. Have you calculated at all what is the total amount that the Government would have to advance for such a purpose?—I know it would be a very large sum indeed.

16987. Have you made any calculations?—No, I have not.

16988. It would run into a good many crores, would it not?—It would.

16989. But you think the Provincial Government should borrow this money?—It will have to borrow this money.

16990. And then advance it to the ryot?—If it cannot borrow the whole of that amount, it can make a beginning and see how it works.

16991. That is your scheme?—Yes.

16992. And then you propose to fix the capacity of the ryot; that is to say, the Deputy Collectors and such officers would have to ascertain the actual financial position of every ryot and decide how much he is entitled to borrow?—Yes, that is so.

16993. Would that be within the administrative capacity of Deputy Collectors in your experience?—It need not necessarily be a Deputy Collector, but some existing agency

16994. What agency would you think preferable to the Deputy Collectors?—Well, there are the panchayats coming into operation; the panchayat officers or the revenue officers may be entrusted with that work; and in the co-operative societies you may perhaps find people capable of doing that work; that is a matter of detail.

16995. You think it would be a feasible practicable administrative action to take to fix the borrowing capacity of every ryot?—It has got to be done.

16996. And to modify it from time to time?—That also has to be done, because the price of cotton, for example, may go down, and then the borrowing capacity of the ryot would be reduced; that is why I say we should not commit ourselves once and for all time to any certain figure.

16997. You have held *jamabandi* meetings?—Yes.

16998. Would you have there this annual discussion as to the borrowing capacity of every ryot?—No, not at a public gathering; it would scare them away at once.

16999. It would be done *in camera*?—It need not necessarily be done in public; certain people can be enquired of.

17000. Then after that the further stage is that you should have a complete liquidation of all existing debts by percentage payment by resorting to legislation if necessary; that is your phrase?—Yes.

17001. What does that mean? Would you have some legislation passed through the Legislative Council?—Yes.

17002. To decide that all debts should be liquidated at a particular percentage?—We should probably pass a rule that no creditor should claim as interest a sum larger than the principal; a rule of that sort would go some way to help. If we dealt with each village as our funds permitted, we should be able to deal with the indigent people in that village, or at any rate, such people as cared to come to us to have their debts liquidated.

17003. I want to go step by step. First of all, you will have a law introduced into the Council to authorise Government to wipe out all debts upon payment by the ryot of a certain percentage?—Yes.

17004. What sort of percentage would you contemplate?—I would take into consideration the assets and liabilities of the debtor.

17005. But in a law you cannot deal with the individual case?—We should not fix the percentage in the law.

17006. You leave it to Government to determine that?—Yes.

17007. Do you think the Legislative Council would be willing to give that power to the Government?—That remains to be seen.

17008. Do you think it is probable?—I think that is the only thing that can be done; there must be a complete liquidation of the debts of the ryot so that he may be able to start afresh and not be allowed to run into debt.

17009. What have you in view: that if the moneylender is paid 20 or 30 per cent. of the debt outstanding, then the ryot would be free of debt?—That is right.

17010. Is that the sort of percentage you have in view?—Yes, and he would be able I think to come to terms on that basis.

17011. The moneylender would?—The moneylender, because when he knows that the man's capacity is only that and no more, and when he sees also the danger perhaps of postponing the recovery, he may come to terms.

17012. Would that apply also to mortgage debts; would he be glad to come to terms on a similar system for mortgage debts?—It depends on the amount.

17013. You are a man of experience in business?—I know you have to respect encumbrances on the land, and we cannot make them all insecure.

17014. You think that is the best solution of this problem of indebtedness?—I cannot think of anything else.

17015. *Sir Thomas Middleton:* You have told us that your experience has been chiefly as an administrative officer and as a public worker?—Yes.

17016. Have you at any time farmed your own land?—No.

17017. In what districts has your experience been mainly?—In Bellary and Kurnool.

17018. Can you tell me, from the information you have gained as an administrative officer, what number of acres a ryot in the Bellary district can work with one pair of bullocks; what is the usual extent?—About 15 acres.

17019. Does it vary much in that district?—It does.

17020. Under what conditions?—I suppose if he has less land he cannot cultivate more; if he has more he tries to do it with the bullocks in his charge; that is all; I mean it depends on the extent of his occupation. The average would work out at 15.

17021. The average is 15 acres, but if he has a holding of less than 15 acres, naturally he is unable to supply the 15 acres required. Is there no difference in the different soils of the district?—A very great difference.

17022. Have you got both black and light soils in Bellary district?—Yes.

17023. Has there been much experimental work done by Indian agriculturists in the Bellary district?—Some people have carried on experiments under the direction of the Agricultural Demonstrators.

17024. *Dr. Hyder:* You have referred to transport charges. Is there much coastal traffic in the Madras Presidency?—No, not much I should think.

17025. Do you think the charges are high?—I had in mind the transport charges between, say, Great Britain and here.

17026. Sea transport or land transport?—Sea transport.

17027. Are you acquainted with the system of charging?—It is 33 per cent.

17028. Is it at the back of your mind that these charges are kept up by means of rings?—There is also that.

17029. Have you got any proof of that?—No.

17030. I did not understand some of the answers you gave to questions put by my colleagues at the other end of the table. Your idea with regard to grazing is that the Government should limit the amount which it at present levies from these Forest Panchayats?—Yes.

17031. Do you say that would tend to reduce the number of cattle?—I say that would be one of the factors.

17032. Let us see if we can test that by an illustration. Do not consider the grazing of cows; let us turn our minds to motor cars. If charges for the use of motor cars were abolished, so that anyone could ride whenever he liked in a motor car without charge, do you think that would increase or decrease the number of people who would ride in motor cars?—Obviously it would lead to an increase.

17033. Supposing these charges were remitted in the case of grazing, would that increase or decrease the number of cattle?—I admit we should have to remove all the inducements to the people to increase the number of cattle. The charge for grazing is 4 annas per cow; if the forest is charged a lump sum of Rs. 250, the people think that they have to permit a thousand cattle to graze in order to be able to pay the Rs. 250. If the amount charged were less, we should be able to educate the ryot and show him that as he has not so much to pay he need not allow so many cattle.

17034. If the amount charged were decreased, you think there would be a tendency for the number of cattle to decrease?—We should have to educate the ryot.

17035. I suggest to you you have used extreme instances to illustrate your point with regard to Bellary famines and decrease in yields?—No, I have not: I have taken the latest.

17036. With regard to this consistent decline in the yield per acre of agricultural produce, I think you refer to the Hospet taluk particularly?—Yes.

17037. What is your explanation of this consistent decline in the yield per acre?—I cannot give you the explanation, but the fact is there, and that is the reason why I want statistics to be collected.

17038. I wonder whether you will agree with this explanation. This refers particularly to the division of Hospet with its three taluks; this is what is

said: "Transplanting, a practice most useful in economising water, in increasing the outturn, is not in vogue in this district except in the case of *ragi*. The ryot is by nature somewhat apathetic and is content with the minimum crop that untilled land can yield"?—I disagree with the last part.

17039. Do you think this does not represent the facts?—The ryot is not content with the minimum crop.

17040. With regard to this taluk of Hospet to which you refer, do you not think that the lands are of the poorest quality in the whole of the district?—Lands on the Tungabhadra canal are all valuable lands.

17041. Apart from those lands, what about the other lands?—Those remarks apply to lands under the Tungabhadra canal with reference to paddy and paddy is grown there.

17042. What is your idea about crop cutting experiments? You say that the average fields should be selected for estimating from year to year. If you were asked to conduct these experiments, how would you proceed?—I should select typical villages for each taluk and in these villages typical fields which may not necessarily be lands of more than average quality. I should like to carry on experiments from year to year. Then probably we should be able to come to a definite conclusion whether the yield has steadily been on the decline or on the increase.

17043. Would you keep the yields from different classes of soil separate? Do you not think that if a larger number of experiments is carried on in a particular kind of soil, there will be greater accuracy in results?—Yes, greater approximation.

17044. *Dewan Bahadur Raghavayya:* On this question of roads, a question was put by Rao Bahadur Muniswami Nayudu and you said that village panchayats could be entrusted with the formation of village roads. That does not dispose of the whole problem. I take it that it is your view that trunk roads (first and second class roads) are also not adequate?—No, they are not adequate.

17045. You will find there is only one mile of road for about 6 square miles in the whole Presidency. Do you consider that adequate?—No.

17046. Do you consider that the trunk roads are also not adequate?—They are also inadequate.

17047. Have you any constructive suggestion to make in regard to the financing of the construction of these important roads?—For the trunk and the second class roads?

17048. Yes, and also those which are not village roads but inter-taluk and inter-district roads?—For their improvement, provincial contributions are required. Also the District Boards may be enabled to earn more.

17049. In what way?—For example, if a scheme like the Tungabhadra is introduced in the Bellary district, you increase the revenue of the District Board. That, again, means an increase in the revenue of the Local Boards because they charge so much per rupee of the land revenue. In that way their resources can be increased.

17050. In the shape of the road cess also?—Yes.

17051. Do you find the road cess adequate for such purposes now?—It is one of the methods by which you can improve the resources of the local bodies.

17052. You have no other constructive suggestion to make in order to improve the finances in such a way as to enable local bodies or the Government without entrenching upon the public exchequer to extend these communications?—They have the power to tax themselves also. If they are in a position to tax, they will tax themselves.

17053. Yesterday you referred to some order under which tanks and channels which had been damaged and which required reconstruction or repairs should not be reconstructed or repaired unless the revenue came to 25 per cent. of the outlay on their repairs or restoration. What order are you referring to? Is it any standing order?—No. The Chairman was good enough to observe that I had used the words "want of imagination." That was a strong expression,

and I wanted to justify myself by citing a case which makes one rather feel strongly. I find from the Gazetteer that when these tanks were destroyed, the then Government issued an order to the above effect, the exceptions being only two tanks, one at Daroji and the other in Anantapur district.

17054. That was an order issued at the time and applicable to the representations that were made at the time to the Government of the day?—By the officials of the day.

17055. I was in the Anantapur district for 2½ years and I did not come across any such order?—I have been referring to what has taken place.

17056. *Sir Henry Lawrence:* What was the order?—I shall read out the extract from the Gazetteer. I think it was in Sir Thomas Munro's time. "In May of the next year he sent some details of the damage done. In the 4 Ceded Districts, 4 dams, 752 tanks, 260 *nullahs* and 855 wells had been either destroyed or greatly injured and, although only such of them had been restored as possessed sufficient *ayacut* to repay the outlay in four years, as much as 6½ lakhs had been spent in repair. Again you will find a similar thing in 1851. The estimates for the necessary repairs amounted to 3 lakhs and, as before, it was directed that only those works should be put in order which would cost less than four years' revenue to restore."

17057. You say there is an order to the effect that unless the money could be recouped within 4 years, the work should not be done. Can you quote that order?—That was the order issued and acted upon in these areas.

17058. What is the order?—I do not know exactly what the order is but the reference is made to it here in the Government publication.

17059. There was no such order?—I am only referring to a Government publication.

17060. *Dr. Hyder:* How old is this reference?—There was one storm in 1804, another storm in 1817 and another in 1851.

17061. Those are the dates of the storms, but when was this order passed to which you refer?—The orders were issued evidently as each event took place.

17062. You do not know anything about such an order?—Except that such a thing was acted upon, I know nothing else.

17063. *Dewan Bahadur Raghavayya:* You do not mean to say that it was due to the wrong policy of Government that there was such an order?—I never suggested that.

17064. *Sir Henry Lawrence:* There never has been such an order?—May I pass on this book, namely, the Gazetteer? It is a Government publication.

17065. *Dewan Bahadur Raghavayya:* You say that in order to stop the use of cowdung as fuel other cheap fuel should be increased for cooking purposes. I believe it is within your knowledge that until very recent times there were a large number of babul trees and also a number of topes on communal lands in villages. Even in the Bellary district, I believe there was a larger number of trees in the old days than there are now?—To some extent that is true.

17066. Can you say why the tree growth has diminished in recent years?—It is due to cutting down of trees by the cattle-grazing people.

17067. Have you any private plantation of fuel trees in Bellary or Anantapur?—Just a few of them.

17068. Will it not be possible to raise private plantations of fuel trees on the poorer soils of Bellary and Anantapur?—I have been suggesting that. I have requested some friends to grow casuarina trees. It will be taken up as an experiment.

17069. If lands are assigned for that purpose, people would be inclined to grow those trees?—I am persuading the people to try the experiment.

17070. Will the Forest Panchayats do such work?—They may.

17071. I find that they have done a certain amount of tree planting in the area under their jurisdiction?—That is one of the reasons why I want to encourage people to do this. Let them amass money and grow rich; it does

not affect us at all. But we must offer as much inducement as is possible to develop these things. I do not want that the Government should put any burden on them.

17072. If you entrust this work to Forest Panchayats, then it does not mean any burden on the people?—At times, you fix the rent that is due to the Government high.

17073. That is about the administration of Forest Panchayats. Are you not aware that these rents represent the average income which Government was realising from these areas for certain panchayats?—It is not so. In these districts the Government had not been realising anything worth mentioning but when they were transferred to Forest Panchayats they wanted to levy an unduly heavy amount.

17074. I am afraid that is not the case. I had been to these Forest Panchayats while on the Board of Revenue and I know that the rent fixed by Government is always less. In some cases no rent is levied and in other cases it is levied only for the first three years?—I know the Government have been revising their old policy during the last year or two. The Government themselves have said that these figures were excessive and they wanted to reduce the amount. This is what they said in answer to my questions in the Council.

17075. You cannot complain now about this rent?—We are not concerned with that now.

17076. You have mentioned it as a policy which is not conducive to proper administration?—Those figures which were fixed 5 or 6 years ago are still heavy enough.

17077. You know, I suppose, there is something like grazing incidence and the Forest Panchayats fix the number of cattle to be taken into their reserves. It is something like 3 acres per cow?—It is practically fixed for them by the Panchayat Officer.

17078. It is a matter of expedience. You want three acres of land at least for a cow to get adequate grazing and that is why three acres is fixed as a unit?—Why should the Government fix this at all. Why do you not trust the panchayats to find out the proper number?

17079. It is just to prevent over-grazing. You were just now complaining of over-grazing. You wanted the area to be limited?—These restrictions defeat their own object. We have to create a sense of responsibility among the people. If they over-graze, then you should take away the forest from them. A system like that would be more effective. The whole system is based upon the assumption that we are devolving a certain amount of responsibility on these panchayats.

17080. You make a suggestion on page 704 that the outbreak of contagious diseases could be brought to the notice of the veterinary officers much more quickly than at present because Agricultural Demonstrators who are constantly on tour could more quickly come to know of the outbreaks of diseases and bring the information to the notice of the veterinary officers, much quicker than the village officers. You mean to say that village officers remain in their villages and therefore are the people that would naturally come to know of these diseases first?—Yes, I had that in my mind.

17081. While Demonstrators are people who are in charge of two taluks; if there is an outbreak in a taluk from which they are removed they might not know about it for sometime?—I do not say that the village officers should be nowhere in my scheme. The Agricultural Demonstrator may derive the information through the village officers and also directly from other sources.

17082. You want that that should be a supplemental source of information?—The village officer is now the person who communicates the outbreaks to the Veterinary Department.

17083. And also to the revenue officer?—Yes; I would substitute the Agricultural Demonstrator for the Veterinary Officer, so that the Agricultural Demonstrator will have to get the information from the village officer as also by his own observations.

Mr. A. Ranganatha Mudaliyar.

17084. But the man that is to tackle the disease is the Veterinary Officer?—I have said that the Agricultural Demonstrator may attend to petty diseases; I have suggested that.

17085. You want to convert him to an additional Veterinary Assistant?—Just as the post offices are entrusted with small additional work like sale of quinine and the rural officials are entrusted with small medicinal boxes.

17086. That does not apply to epidemic diseases such as rinderpest?—No.

17087. Then there are figures which you give on page 707 of your note which I am not able to understand. You say the number of non-cultivating tenants in the Bellary district rose from 256 to 28,298 in 20 years. Have you not misread the figures in the Statistical Atlas; I find there has been in the Presidency, as a whole, a certain amount of increase under non-cultivating tenants; from ·4 of the population it rose to 2·2? But your figure suggests that the increase was far greater, from 256 to 28,298? I think you have misread these figures? Have you the Statistical Atlas?—I have not got the Statistical Atlas but I have my authority for it.

17088. The figure I have here against landowners, deriving income from rent of agricultural land leased, is 28,298. This includes actual workers and dependents. The income from agricultural land leased applies to landowners and not to tenants?—I have taken my figures from the Madras Census Report.

17089. The figures are all right; but you have misread those figures. The landowner who has leased his agricultural land has ceased to cultivate himself?—Are you referring to figures for 1921?

17090. Yes, for 1921?—The income from rent on agricultural land is the important thing. The figure against non-cultivating landowners is 35,920 (including workers and dependents, of whom 16,000 were dependents) deriving income from rent on agricultural land.

17091. Leased?—Leased, yes; that is, the non-cultivating tenants; income from rent on agricultural land leased.

17092. *Mr. Calvert:* What is your deduction? What do you deduce from these figures?—My point is that the cultivating landowners are on the decline.

17093. Does it not show a large increase of prosperity?—No; non-cultivating landowners are increasing.

17094. Take the converse. Government revenue has gone down; taxation has not increased with the rise of prices and other people are now living without doing any work?—But they have purchased the land. They have taken the land from the poorer people and leased it out to the others. How does this come about?

17095. Increase of prosperity?—You find that the cultivating landowners have gone down considerably. The number was 451,035 in 1901 and it is now 315,949.

17096. Increase in prosperity?—But the people have sold their land?

They have no need to work; they live on rents; there is less need to work now and people depending on land also have been compelled to part with their land.

17097. The margin left to the owners is more and therefore more and more people are living on land without working?—No; they come back again as tenants.

17098. *Dewan Bahadur Raghavayya:* If your interpretation is correct then the holding of the land must be profitable; it must be paying to the non-cultivating tenant as well as the cultivating tenant as the case may be, and also to the owner of the land?—My reading is this; so far as the actual cultivator is concerned he is not getting sufficient return; the other gentleman makes the most of it.

17099. Who is the other gentleman?—The non-cultivating landowner or tenant; he gets more for his share while the man actually tilling for him, the tenant or the cultivating landowner, does not get enough.

17100. *Dr. Hyder:* Was there not plague in Bellary in 1910 and did not people leave the district? They did not invest the money but took away the money from the land and invested it outside Bellary?—No; I do not think so.

17101. *Sir James MacKenna:* In answer to Sir Henry Lawrence I think you said that you are in favour of flotation of public loans to raise money to enable the ryot to borrow as and if he needs, provided he does not exceed his borrowing capacity. Where would you suggest that this highly attractive loan be floated, in Madras or in London?—I have not thought about the matter. I think the Government, if they care, will devise the best method for it, in the most profitable way.

17102. You suggested a loan; you think that it would be subscribed by the public?—I do not know.

(The witness withdrew.)

Major-General F. H. G. HUTCHINSON, C.I.E., I.M.S., Surgeon-General with the Government of Madras.

Note on the well-being of rural population.

The normal yield in the Madras Presidency of the various food grains, allowing for removal of the husk is approximately—

	Tons.
Paddy	5,250,000
Cholam	1,308,000
Ragi	1,064,000
Cumbu	682,000
Korra	210,000
Varagu	263,280
Samai	88,030
Maize	36,930

Very little work on nutritive value of food grains, apart from that now being carried out by Lieutenant-Colonel McCarrison, I.M.S., at Coonoor, has been done in India. The most notable investigation is that undertaken by Lieutenant-Colonel McCay on the dietary of prisoners in Bengal Jails, and published in 1910. By chemical tests he showed the quantity of each nutritive material (protein, carbohydrate, fat, mineral matter, water) certain grains contain. The facts are given in the following table.

——	Protein.	Carbohydrate.	Fat.	Moisture.	Ash.
Burma Rice	6·95	77·25	0·96	11·13	1·34
Country Rice	6·86	78·85	0 86	11·05	1 32
Wheat Flour	12·24	70·92	2·18	11·83	2·46
Makkai Flour	9·55	66·20	2·30	11·50	3 55
Mung Dal	23·62	58·45	2 69	10·87	3 57
Masur Dal	25·47	55·03	3·00	10·23	3·33
Gram Dal	19·94	51·13	4·31	10 07	3·72
Kalai Dal	22·53	58·02	1 10	10 87	3·61
Maltou Dal	22·01	53 97	1·96	10·96	3·60
Arhar Dal	21 67	54·27	3·33	10·08	5·50
Millet	10·20	68·30	3·90	13·00	5·10

The analysis of millet was not made in this country.

The chemical composition of grain as revealed by ordinary analysis varies within certain limits according to the area in which it is grown. This is perhaps not of very great practical importance. There are, however, certain "accessary food factors" or "vitamins" which have not yet been isolated but are of vital importance. Their presence is necessary to growth and their

absence is the cause of certain definite deficiency diseases, and perhaps of other vague conditions of ill-health. Lieutenant-Colonel McCarrison has shown that the vitamin content of a grain varies with the conditions under which the plant is grown. Further investigations on these lines are of incalculable importance.

I wish to add a few words on the effect on health of a deficiency of the ordinary chemical constituents of a normal dietary.

Such deficiency may arise for two reasons :—

In the first place a diet though abundant may not be easily digested and absorbed. That is a diet of choice, though chemically abundant may be physiologically a diet of partial starvation. Secondly there is the diet of necessity from economic reasons—a diet chemically deficient and so a diet of starvation. In both cases ignorance may be of importance.

Lieutenant-Colonel McCay carried out many experiments on the digestibility and absorbability of the Bengal jail diets. His work was published by the Government of India in Scientific Memoirs No. 37. He found that about 50 per cent. only of the proteid value of the food was absorbed when rice in large quantities was consumed. In those days the jail diet included 26 oz. of rice.

A man in full work requires 19 oz. of rice to provide his carbohydrate need. Lieutenant-Colonel McCay found that any excess over this quantity resulted in very defective protein absorption—in other words protein starvation on what chemically and physically appears an abundant diet. The consumption of 1½ lbs. of rice daily is not uncommon among rice eaters.

There is no need to multiply instances of defective absorption: it is patent to all that methods of cooking influence digestion; thus, large masses of tough *chappatties* make effective penetration by the digestive juices difficult.

The points I wish to bring out are that a degree of starvation may arise even with a diet of choice and that much more work is required on the chemical composition of food grains in India, on their absorbability. Underfeeding from a deficiency in the diet itself of one or more of the essential chemical ingredients (excluding vitamins) is even more common. It is not generally due to a general insufficiency of all ingredients, but to a relative lack of one nutritive constituent. I do not wish to be misunderstood. I am not now including vitamins in the nutritive constituents, although their absence appears to arrest growth. Their action is obscure, but they seem to render possible the assimilation of certain nutrients. Vitamins cannot maintain life and health unless the nutritive constituents of the diet are present in their proper proportions.

What is the constitution of the diet of the agricultural population? It varies naturally in different localities and I have no certain knowledge.

Here is an actual example of a diet of agricultural workers on the East Coast, among whom the deficiency disease allied to beri-beri is common.

Rice	24 to 30 oz.
Dal	1 oz. (eaten 2 or 3 times a week).
Meat	½ oz. (eaten once in 10 days about).
Oil (vegetable) . . .	½ oz. to 1 oz.

Milk—Milkproducts—very occasionally used.

The figures constitute an average, based on the amount of these materials consumed over a certain period. It cannot be said that each individual received a similar share.

This is a diet extremely deficient in protein and fat and this deficiency is accentuated by the huge bulk of rice interfering with protein absorption. It is a starvation diet. Compare this with the diet of certain hill tribes of Bengal (taken from Lieutenant-Colonel McCay's Report) and with the diet given to Indian Troops.

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Bhutias (dandy-wallas, coolies, etc.)

Rice	24 to 28 oz.
Meat	16 to 20 oz.
Vegetables	6 to 10 oz.
Butter	4 oz.
Bread	6 to 8 oz.
Cheese	2 oz.

Bhutias who earn less wages.

Rice	16 to 18 oz.
Meat	16 oz.
Vegetables	8 oz.
Cheese	2 oz.

Sikkim Bhutias.

Rice	16 oz.
Meat	16 oz.

Vegetables, etc., as above.

Lepchas (Poor classes).

Rice	28 to 30 oz.
Meat	8 to 10 oz.

Vegetables, etc., as above.

Nepalese.

Rice	16 oz.
Dal	4 oz.
Meat	8 oz.
Vegetables	8 oz.

Nepalese Cultivators.

Rice	24 to 28 oz.
Dal	4 to 6 oz.
Meat once a week . .	8 oz.
Vegetables	8 oz.

Indian Troops Diet—(Supplied free to Indian Army Service Troops).

Rice or atta . . .	24 oz.
Dal	3 oz.
Meat	3 to 4 oz. in lieu of 1 oz. ghi.
Ghi	2 oz., or 1 oz. if meat is given.
Vegetables	6 oz. (3 times a week).
Sugar	1½ oz.
Potatoes	2 oz.
Salt	½ oz.

Considerable information on the part played by habitual underfeeding in the production of physical deterioration is to be found in the Report of the Inter-Departmental Committee on Physical Deterioration—London, 1904.

The Food (War) Committee Report contains further information on the effect of a reduced diet on a population previously well fed.

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"The first effect of diminution of food is a diminution in the weight of the body. The individual if he remains at his work puts out the same amount of energy as before, the energy lacking from food being supplied in the first place by the fat and in the second place by the muscular tissues of the body."

* * * * * * *

" This seems to have been the condition of the greater part of the urban inhabitants of Germany during the War, these having received a daily allowance of food of not more than 2,000 calories. They lost weight, but they were stated to be able to carry out their ordinary work under the stress of circumstances in which they were placed. * * * This state of economical nutrition seems to be without danger to health even when extended over some months. When extended over years, as in Germany, the general effect appears to be a diminution in the resistance to tubercular infection, the incidence of tuberculosis and the deaths from this disorder having largely increased in all parts of Germany. On children the effect of the diminished diet has been to restrict growth, but not to stop it. Experiments on animals, as well as German observations tend to show that return to normal conditions will probably be followed by an increased rate of growth, which will be sufficient to make up for that lost during the past years."

The important points brought out are:—

(*i*) Underfeeding leads to physical deterioration.

(*ii*) The effect of underfeeding is a lowering of the power of resistance to disease.

(*iii*) The resumption of a sufficient and well-balanced diet results in a return to normal health.

The effect of underfeeding in producing liability to disease is well illustrated in the outbreaks of relapsing fever and typhus which followed the potato famine in Ireland: in the epidemic of malaria associated with scarcity in India, in the prevalence of epidemic opthalmia among underfed children.

The remote effects of underfeeding especially on the mind are not less injurious. There is not only a lowering of mental power, but imperfect nutrition of the brain is apt to produce a " feeling of dissatisfaction, discomfort and depression, culminating sometimes in madness and hallucinations."

Investigations into the dietaries of sections of the population in other countries have yielded valuable results, one of the most important deductions being that defect is due not so much to poverty as to ignorance. Further investigation is urgently needed in India. May I indicate a few lines for such investigation for the information of the Royal Commission.

(*a*) Actual dietary of different classes in all parts of the Province;

(*b*) the chemistry of food;

(*c*) the physiology of food, *i.e.*, the factors favouring or impeding digestion and absorption of each food;

(*d*) the pathology of food;

(*e*) the natural food products that are substitute foods for use during famine and other times;

(*f*) the preservation and distribution of food;

(*g*) utilisation of waste products;

(*h*) the cooking of foods;

(*i*) the economics of nutrition.

The above can be multiplied but they are sufficient to indicate the need for knowledge. Poverty is difficult to remove; ignorance can be countered more readily.

The requirements are:—

(1) an Institute where nutrition in all its aspects can be studied;

(2) a liaison either in the Institute or in different institutes between medical men, pharmacologists, agriculturists and engineers;

(3) a direct connection between a nutrition enquiry and "Sanitary demonstration areas," "model villages or health villages" the establishment of which is of such vital importance to the welfare of the rural population.

Remarks on medical education may seem to have little connection with a Commission on Agriculture, but the work of the Commission will not be complete unless the future health of agricultural workers is assured.

"The practical basis of preventive medicine is personal hygiene." * * * "a knowledge of the laws of health, sound physiological living and the avoidance of slight but habitual departures from it."

"If every individual could forthwith practise a life of hygiene * * * a vast mass of functional disease would disappear in a month, and a great deal of preventive work for the individual and the community now incumbent and imposed upon us as a nation, would be redundant and unnecessary."

The laws of health may be acquired through propaganda work and demonstration areas, but the real way for spreading such knowledge is through the medical practitioner who comes in intimate and daily contact with the people.

Sir George Norman, from whose pamphlet the above extracts are taken rightly points out that the student of medicine should be taught "the science and art of his calling as they are applicable to the work he will have to do." When a patient consults a doctor he wants treatment, but he also wants to know how long he will be ill and incapacitated for work, and if he can keep from getting the same illness again. Preventive medicine enters into every case and should enter into every subject in the curriculum. The General Medical Council of Great Britain has laid down that it should, and facilities for carrying out this instruction have in part been secured by the raising of clinical teaching to University standard through the establishment of "University clinics" or "Clinical Units." India should follow suit.

Addendum to the above Note.

Pulses.

According to information received the normal output of the pulses freed from husk is 260,000 tons approximately. This figure is exclusive of horse gram, but it is said that this is mainly used for horses and cattle.

The chemical composition of the pulses has been given in the table of analyses. They are relatively rich in protein, and provide a cheap and efficient method of supplementing the deficiency of nitrogen in a purely vegetable diet.

260,000 tons would supply only about ½ oz. per head daily to the population of the Presidency. If these figures are correct the deductions are:—

(*i*) Many individuals must obtain their protein from animal sources—this is certainly the case to some extent: fish, meat and milk products are used, but I cannot say how many use them and how much.

(*ii*) A considerable section of the population must depend mainly on cereals for their protein supply. In other words there is protein deficiency in the diet. It is protein deficiency which is responsible for lack of resistance to infection and for physical deterioration.

The average output of the main cereals is about 9 million tons allowing 1 to 1½ lbs. per head of population daily. Of the cereals rice is by far the poorest in protein, and about 20 per cent of the protein is unabsorbed even when rice is taken in small quantities. Rice forms nearly 60 per cent of the cereals produced in the Province. In nutritive value the millets are held to stand midway between rice and wheat.

I have no information on the volume of cereals—pulses imported and exported.

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Oral Evidence.

17103. *The Chairman:* General Hutchinson, you are Surgeon-General to the Government of Madras?—Yes.

17104. We have heard evidence on the Public Health side of this Presidency. Would you just, for the sake of clearness, tell the Commission what your own responsibilities are?—My responsibility is for the health of the Province generally; it is mainly medical education and the treatment of the sick in the hospitals.

17105. You put in a note, which the Commission has read with much interest and for which we are greatly obliged to you, which deals in the main with the question of nutrition?—Yes.

17106. I do not know whether on that or any other subject you wish to make any general statement at this stage or shall I proceed to put a few questions?—I should like to answer questions.

17107. Did you hear the evidence given before the Commission by Colonel McCarrison this morning?—I did.

17108. Have you anything to say on Colonel McCarrison's work and opinions?—I think Colonel McCarrison's work is of vital importance to the well-being of the whole population of the Madras Presidency.

17109. It will be within your knowledge that Colonel McCarrison is concerned about the future of the work which, in the nature of things, must pass from his hands some day. Have you any views about that?—I am personally more concerned about it, because I see we are never going to get any great advance in making a healthy population unless we get down to the root of the whole problem which is nutrition; my aim is now as soon as ever we can, to attach men to Colonel McCarrison's Laboratory so that the work can be carried on.

17110. That is so far as the problem can be met by training future workers. How about the relation of Colonel McCarrison's Institute to the Presidency? Would you look with favour on any proposal to incorporate such work as part of the medical work in this Presidency?—Yes, certainly.

17111. And do you like Colonel McCarrison attach importance to a continuation of the sympathetic interconnection between Colonel McCarrison's Institute at Coonoor, the Agricultural Institute at Coimbatore and the Animal Nutrition work at present being carried on at Bangalore?—Yes, I think that is very important.

17112. So that I gather that it would be your ambition in any scheme that you might recommend to the Government to make provision for the proper co-ordination of these three departments?—Undoubtedly.

17113. The Animal Nutrition Section at Bangalore is of course under the Imperial Government, but that should be no bar to a sufficient linking up of these three institutions to ensure complete co-ordination of the work?—I think co-ordination can be secured by the individuals concerned.

17114. You probably agree that you are very fortunately placed in the matter of individuals at this moment?—Very.

17115. One's experience in these matters is that a continuity of co-ordination sometimes has to depend on something more than mere good-will between individuals?—If you wish to secure continuity of co-ordination then you must have a Central Institute where all are working under the same roof under the same Director.

17116. That is your view?—Yes.

17117. Do you attach great importance to a continuation of the co-ordination between these three?—Yes, I do; it is very important.

17118. Then what scheme have you in mind?—At present my scheme is to get the medical side going.

17119. Under the Province?—Yes; that is the first essential.

Major-General F. H. G. Hutchinson.

17120. What would Colonel McCarrison's personal position in regard to his own seniority in the service and so on be in such a scheme?—Colonel McCarrison is now a Member of the Medical Research Department. What I hope to see is that he will become the Director of the Pasteur Institute at Coonoor.

17121. That would give him complete control of the buildings and in your view he could carry on the essential work of the Pasteur Institute which, I take it, is the supply of anti-rabic serum?—It could be done under his direction; it is not a very difficult business. At the present moment the people do not come up there for treatment in large numbers; the vaccine is distributed to various centres and people are treated in the hospital centres.

17122. So that practically it is a matter of routine?—Certainly.

17123. It would not interfere with his work to any serious extent?—No.

17124. Would you tell the Commission what degree of probability there may be in your mind that your plan will be given effect to within a reasonable amount of time?—I am afraid it is very difficult for me to answer. It is a question of finance; but I very much hope that we shall get a beginning in the next year.

17125. You say " beginning "; what do you mean by that?—To get Colonel McCarrison appointed in charge of the Institute, and to put under him a trained Chemist. That I call a beginning.

17126. But you do not anticipate that the Institute could be put on to the provincial budget at that time?—The Institute at the present moment is a private association more or less, but Government already subscribe practically half the expenditure. It is quite possible we may get the Institute taken over entirely as a Government institution.

17127. But the Government of the Presidency?—Yes. At the present moment it is run nominally by a private association.

17128. Have you considered the alternative, the obvious alternative, of this Institution or a group of institutions being under the Government of India? —I have not considered this particular Nutrition Institute as a central institute. I have had experience of getting a Central Institute started. There has been a proposal for many years for having a Central Research Institute at Delhi; we almost got it on its legs; but it has not been got going yet.

17129. I have no views one way or the other myself; I merely throw out the suggestion. Quite obviously the work of the Institute is of All-India importance?—I admit that; but I am speaking from the point of view of the Presidency for the health of which I am responsible and I want one immediately.

17130. Is there any half-way house by which you can ensure continuity and ensure financial support for this work?—The half-way house is a Provincial Institute to which the Indian Research Fund Association will continue to contribute.

17131. You look forward to a contribution?—That is what I want.

17132. I am well aware of that. You do look forward, when this Institute is provincialised, to a considerable contribution from the Research Fund?—Yes, just as any other provincial institute.

17132. I am well aware of that. You do look forward, when this Institute is have the financial measure of the problem at the start. We should require to start with about Rs. 30,000 over and above what the Research Fund Association gives now.

17134. As an annual recurring charge?—Yes, as an annual recurring charge to start with.

17135. Under the present constitutional Reforms, of course the Government of India are not in a position to make financial contribution to an institution carried on by a Province; you are no doubt aware of the position?—Yes.

17136. If an institute of this sort, or rather a group of institutions under the control of the Provincial Government, assisted by the financial support of the Indian Research Fund, is started, having regard to the fact that the work

being carried out would be beyond all dispute one of All-India importance, would you look with favour on a proposal that the Government of India should also make some contribution towards the expenditure?—I should not object to a contribution.

17137. You would never object to any financial support?—No. May I point this out? Supposing by a chance Colonel McCarrison became Director of the Pasteur Institute at Coonoor his pay would be paid by the Provincial Government as the pay of the Director is now.

17138. So much for the financial aspect of the problem. Your note deals in a very interesting manner with highly technical questions which I do not propose to enter into, because I am not competent to do so. There are just one or two points which I want to ask you of general application. You give on page 731, under the heading "The well-being of the rural population" the normal yield of the various food grains, allowing for the removal of the husk. Do you know whether there is an annual exportable surplus over and above the requirements of the population?—If the whole of the population eat cereals, at the rate they eat they will consume very nearly the whole.

17139. Would I be approximately correct if I said that once in five years there is an exportable margin of food grains over and above the requirements of the population? Would you contradict that?—I would not like to contradict that, but I would like to note that the production of pulses is very much below the requirements of the population.

17140. I am not suggesting that there is an over-sufficiency?—There is no sufficiency of pulses, but there is a sufficiency of cereals.

17141. On page 734, you are detailing the two principal physiological effects of underfeeding, physical deterioration (stunting in growth) and lowering of the resistance to disease, and then you say: "The resumption of a sufficient and well-balanced diet results in a return to normal health." That is only so in the case of juveniles, assuming that there is a sufficient growth period left for them to grow to normal bulk?—I am referring there to the effects of a diminution of food in a population previously well fed. Those were extracts from the Food War Committee's report, and they are practically based on what happened in the case of Germany.

17142. I refer to the view expressed in these words: "On children the effect of the diminished diet has been to restrict growth, but not to stop it. Experiments on animals, as well as German observations tend to show that a return to normal conditions will probably be followed by an increased rate of growth, which will be sufficient to make up for that lost during the past years." But is that true only in the case of children to whom a sufficient period of the normal growing life remains?—Yes.

17143. That is all I wanted. I just wanted to be sure I understood you rightly. In the list of subjects for investigation you have given "(*g*) Waste Products." Have you in mind there the utilisation of night-soil for manure? —Yes, certainly.

17144. Waste products from the human body?—Certainly.

17145. Are any experiments being carried in the Presidency or elsewhere in India to your knowledge, on the preparation of night-soil for use as manure?—I am not aware of any. There is a great deal of work being done in connection with the safe way of utilising night-soil, and especially the utilisation of stable manure. They are trying to get erected a set of platforms on which the manure is stocked. It has been found if you put one layer of your stable manure then a layer of night-soil above it, and then another layer of stable manure you get rid of your night-soil and naturally you get rid of your flies, and you get splendid manure.

17146. Is it the case that harmful bacteria or parasites are destroyed by the process of fermentation?—I think very likely; yes.

17147. On page 735 you say, "The laws of health may be acquired through propaganda work and demonstration areas, but the real way for spreading such knowledge is through the medical practitioner who comes in intimate and

daily contact with the people." How far is the suggestion there practical? In India does the medical practitioner come into intimate and daily contact with the villagers?—No, but it is growing every year. Government have now started a system of subsidising practitioners to settle in rural areas; they are trying to get these medical practitioners, who are given a very small subsidy, to settle in rural areas, in different villages and to come in daily contact with them.

17148. Have you to apply any further financial stimulus?—At the present moment it has not been altogether successful. Probably the amount given to them as subsidy is not sufficient to attract them, and the practitioners have not been long enough in the villages to acquire private practices.

17149. *Professor Gangulee:* What is the amount?—It is Rs. 400 a year for the L. M. P., and I think Rs. 600 a year for the M. B. B. S.

17150. For what period?—A year. He is also given drugs and an extra little subsidy to maintain a mid-wife. He gets Rs. 360 a year for drugs which become his own property. A few have been successful, but it depends a good deal on the individual.

17151. *The Chairman:* What do you think about the possibilities of improving public knowledge of hygiene through the agency of the public schools? —I think an immense amount could be done provided you do not attempt to teach too much in the schools, for what the students want to learn is personal hygiene, how to live a healthy life. If that was taught in the schools I think an immense amount of good would be done.

17152. The ordinary rules of health and not too much about medicine?—Yes, the ordinary rules of health.

17153. Is there a prospect that some such scheme might be set on foot if it is not already under way?—We hope to do a little in connection with inspection of schools in the way of giving them general ideas on one or two points connected with health. The schools are inspected regularly by a Medical Inspector, and we hope to utilise the Medical Inspector to do that.

17154. One difficulty in the way of getting anything done through the schools lies inevitably in the low calibre of many of the teachers?—I do not think the teacher can teach the laws of health unless he knows and practises them himself.

17155. Do you suggest that the teachers do not know them?—Yes.

17156. I judge from that that you would recommend that in any normal school or other institution carried on for the purpose of instructing teachers emphasis should be laid on teaching hygiene?—Undoubtedly.

17157. What about water-supply in rural areas? Do you think there is much disease in the Presidency amongst the rural population as a result of bad water-supply?—Undoubtedly.

17158. That no doubt depends upon habit, but it also depends upon the physical arrangement of the well?—There is not always a well.

17159. There is not always a well?—There is a great deal of cholera in the part of the Presidency with which I am acquainted in villages on the river beds during the hot weather. That is due very largely to the custom of damming of the water into a little pool which is fouled in every conceivable way.

17160. Why is it dammed? Is it for convenience?—Yes.

17161. Do they enter the pool?—Yes.

17162. Do the people wash in it?—They wash cattle.

17163. Defecate in it?—They do not.

17164. How does the cholera infection take place?—People go into the water themselves. The worst cholera I ever saw was due to direct contamination of the water by the coolies working there. It is one of the worst cholera epidemics I ever saw.

17165. So that the infected person by merely touching the water charges it with cholera?—I have been trying to prevent it for years; I should like to see the principle of the village pump adopted as far as possible.

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17166. Rather than the bucket and the rope?—I do not like the bucket and the rope.

17167. Are you in favour of any particular style of pump from the medical point of view?—I am not talking of any particular style of pump, but I want a simple pump.

17168. An ordinary surface tension pump?—A chain pump would be very good indeed.

17169. Do you think that a considerable expenditure of public funds on the provision of wells fitted with pumps would be justifiable?—I think it would reduce a good deal of the sickness and mortality of the Province.

17170. And does the sickness and mortality of the Province lay a heavy charge on provincial funds?—A very heavy charge; at the present moment, we are treating an enormous number of sick people.

17171. Do you think you could get down to rupees and make a good case for the spending of important sums of money in this direction?—It would be difficult to make a financial case for it. See Appendix.

17172. You think it would? You do not think that the indirect savings would be sufficient to carry on the expenditure incurred?—In all these health measures, you have to take into account that a healthy man is of certain value; it is very difficult to put it down in terms of rupees.

17173. Probably, a ten-year programme, spreading the expenditure over that period of years would be the ideal arrangement, would it not?—It seems there is a possibility of meeting these things by estimating the cost of the whole thing, floating a loan, and paying it off over a series of years. I think the great difficulty for finance is that we have to spend everything out of revenue.

17174. If you could by a loan or by other means, finance an important movement of this kind, you would of course be in a position, having settled the type of pump that you require, to place a very large order on the market and get the advantage of a large quantity at reduced prices?—Yes. Water by itself, unless it is tackled with the food question, is not going to do wonders; after all, the food question has got to be tackled as well as that of water.

17175. I come to the food question, and I should like you to tell the Commission what practical steps you recommend to meet the deficiency in foods, and the insufficiency in the total diet due to semi-starvation, the result of extreme poverty?—May I take the example of the diet, particulars of which were given to the Commission on Sunday, when they went to see a village? I think, if I am right and the *Madras Mail* figures are correct, the villager said that he spent roughly Rs. 300 a year on rice, for a family consisting of himself, his wife and 2 children and possibly guests. He also spent Rs. 37 a year on different varieties of gram. If you work those figures out, it comes to roughly 26 to 30 ounces of rice per head per day, and somewhere about 3 ounces of gram. The work that has been done on food absorption in this country (one of the important things as regards food is the quantity absorbed after it has been taken) has shown that rice taken in that quantity, 26 to 30 ounces per day, prevents the absorption of the proteid in the diet. 18 to 19 ounces per day is the maximum that is necessary for man in full work, to give him the necessary carbo-hydrate value; anything in excess of 18 to 19 ounces is not only a waste, but it is harmful; it prevents the other proteid in the diet being absorbed. The point I want to bring out is this: supposing the family could reduce the rice consumption to 18 ounces per head per day, with the money that they would save by that means, which would be about Rs. 80 a year,, they could double their gram consumption, and have about Rs. 43 in hand for other expenditure. That is the line we could easily take. I have given you in my memorandum an example of a diet which is consumed by people who suffer from beri-beri and many diseases such as intestinal diseases, gastric ulcer, duodenal ulcer, renal diseases, etc., that are associated with that kind of diet; if they could reduce their rice to 16 to 18 ounces a day, they could afford double or treble their present proteid intake.

17176. In the matter of milk supplies, do you think that the lack of milk is an important cause of the peasant's weakness?—Milk in itself is an important

diet; it is easily absorbed, and it is a very good way of giving proteid. A man in full work requires 19 ozs. of pease for the full protein need, that would be about 24 soup plates, taking a big table-spoonful of pease to the soup plate; if you make your soup with milk, it reduces your volume down to 8 soup plates.

17177. Is that a complete diet?—No, it is proteid need.

17178. A complete proteid diet?—Yes, and a certain amount of carbohydrate and fat too. The people are wasting their money in taking such large quantities of rice.

17179. In the matter of the lack of certain essential elements in the food called vitamins, do you think it is within the financial capacity and within the range of practical house-keeping for the cultivator to supply himself with those things in which his normal diet is deficient?—Take the case of beri-beri disease; it is due to this particular diet that I have given you an example of, lack of vitamin B; double his proteid by doubling his gram consumption, and he has got his vitamin B.

17180. How about vitamin shortage?—There is great vitamin shortage and an increase in consumption of pulses and milk products would help.

17181. Is there any practice of growing lettuces or other green vegetables and eating them?—This is not a common practice, but the people eat leaves and roots the value of which I do not know.

17182. A good deal of research work has to be done in that direction?—It is needed.

17183. I understand your general view then is that it is largely a matter of propaganda to teach these people how to balance their diet properly?—That is the first thing to do.

17184. Do you think they would listen to propaganda directed to that end?—That is a question of habits; habits once acquired take a long time to break, but because that is so, there is no reason why we should not make a start.

17185. It is so important in your view that an effort ought to be made to put matters right?—Yes.

17186. Is it your opinion, from your long experience, that the average member of the cultivating and agricultural labouring class is below the par of physical vigour during an important part of his life?—Usually, he is below par, in fact he has got no reserve; once he gets ill, it is very difficult for him to pick up.

17187. He is fairly active as long as he is really well?—I am talking about agricultural work, about the man who works in the open air; he is fairly active as long as he is well, but once he gets ill, he has no reserve.

17188. *Professor Gangulee:* You consider this amount of rice, 24 to 30 ounces per head per day, considerably more than they ought to eat?—Yes.

17189. Because, in your opinion, it interferes with the metabolic processes?—Yes.

17190. 16 to 18 ounces is sufficient?—19 ounces for the man in full vigour.

17191. What is the rate you give in the jails to the prisoners at work?—I speak open to correction, but I think the jail rate has been reduced to 18 ounces; it is largely in the jails that this work was done.

17192. Colonel McCay in Calcutta has done some work in that connection?—I think he has reduced it to 18 ounces of rice and 6 ounces of *dal*.

17193. In the diet that you have mentioned, *dal* is one of the things lacking?—It is lacking in protein value, but the point is that it could be improved without costing any more.

17194. With regard to the suggestion of yours about model villages and health villages, have you any idea how one should go about building up these model villages?—In the Madras Presidency, we have been hearing about them for some time. The idea is to show the people how to live.

17195. Is it under your department?—Not my department, but the Public Health Department; the idea is to show them simple ways of living healthily,

and in conjunction with that we ought to be able to undertake enquiries into nutrition, and try to improve their food.

17196. How many such villages would you have in the Presidency, one in every district?—That is rather a large order to start with; I should like to see that, but at the present moment I think they have got one in Madura; I think they have started two or three in the Presidency.

17197. They are starting?—They have got one going now, and that is run in the Madura district.

17198. With regard to this Indian Research Fund Association, is this Association confined only to medical research?—It is for medical research.

17199. Only for medical research?—Yes.

17200. Is it a semi-official body?—No, it is a private body.

17201. In the governing body there are 5 members and most of them are officials?—The main reason for that is that Government is the only subscriber.

17202. You do not have any subscription from the people?—No.

17203. And you have no place in the Association for research workers who are actually doing the work?—There is no laboratory belonging to the Research Fund Association.

17204. No research worker can be a member unless he pays Rs. 500. Is there any place for a research worker?—This point I have mentioned before. For nine years we have been trying to get a Central Research Institute started, and it was going to be largely financed by the funds of the Indian Research Fund Association. But there is no laboratory actually belonging to the Research Fund Association.

17205. With regard to the Scientific Advisory Board, I think the governing body consists of members of whom not less than three shall be the members of the governing body?—The Scientific Advisory Board advises the governing body.

17206. Supposing a requisition for a piece of research comes to you, you will have to refer it first to the governing body?—It is referred to the Scientific Advisory Board.

17207. And then the governing body decides? Who allocates the fund?—The governing body.

17208. I find there again "the member of such board shall be appointed for one year." That means the member of the Scientific Advisory Board?—Yes.

17209. In that case there may be some difficulty as regards continuity of direction?—You find that there are three members belonging to the governing body who are practically *ex-officio* members.

17210. *Mr. Calvert:* I understood that you consider about 16 ounces of rice is the maximum for good digestion?—As a matter of fact, I said from 18 to 19.

17211. Your note seems to put it at 24?—I think it is a waste.

17212. This ration you have given us is the Indian troops' peace time diet?—Yes.

17213. Have you ever attempted to ascertain whether the ordinary soldier in peace does more work than the cultivator?—I regret I cannot give an answer to that.

17214. I understand that you would favour detailed enquiries into rural dietaries?—Yes.

17215. We have done that in the Punjab. I think considerable progress has been made on this question of rural dietary?—I think it must be continuous.

17216. You practically want a detailed enquiry into it?—Yes.

17217. Do you attach any value to Colonel Gill's epidemiological forecast?—Yes. I think it is extremely valuable.

17218. You think it will enable you to take preventive measures in advance of an epidemic?—Undoubtedly.

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17219. *Mr. Kamat:* You told us just now that the agriculturist is below par and that he has no reserve. Taking into consideration the peace scale diet of Indian troops, how much below that is the agriculturist if he is below par?—I cannot give you an exact answer to that. What I want to imply is that the agriculturist's scale, *i.e.*, his diet, affords no reserve when he gets ill; he goes down, it is very difficult for him to pick up.

17220. When you said that he is below par, am I right in taking it that his diet is below par compared to the food which is allowed to the Indian soldiers in peace time?—Yes, it is undoubtedly. The diet of the agriculturist, as a rule, is insufficient for his needs.

17221. In this connection, I should like to ask you whether he is also below par in this respect with reference to the British workman?—That is rather a difficult question to answer.

17222. But you will subscribe to the view, as a general impression, that he is below par compared to the British workman?—I think very much so.

17223. And if, therefore, the efficiency of the Indian labourer or of the Indian agriculturist is below the efficiency of the Britisher, it is partly due to the diet of the Indian?—Yes.

17224. You have given us an idea of the normal amount of protein matter and the nutrition required for healthy living. Taking that as the standard, did you try to find out whether the food supply in this Presidency if distributed to the population, comes up to their requirements according to your scale?—I have pointed out that the supply of gram grown in the Presidency is quite insufficient and inadequate. In my note, I have said so. Assuming that 6 ounces is the minimum requirement, it is obviously very much below, even allowing for the fact that a great many people eat meat and fish.

17225. This morning we were told that the average requirement of pulses will be about 4 oz. Perhaps you think it should be 6 oz.?—I think Colonel McCarrison would like to correct his figure from 4 to 6 oz.

17226. And the Presidency is not producing that amount of pulses here?—No, not to give that amount all round.

17227. I want to know whether the same thing is occurring with reference to the other food grains?—All the cereal grains are consumed in the Presidency. We have an abundant supply.

17228. More than the 19 oz. you said?—It supplies more than that.

17229. You say the Presidency is producing more cereals than pulses?—Yes.

17230. I should like to ask you something about the subsidy to medical men in order to induce them to go into rural areas for medical relief. How much of subsidy is generally given to a medical practitioner to go to the rural areas?—The amount given to an L.M.P. is Rs. 400 a year, and to an M.B., University graduate, it is Rs. 600 a year. He gets in addition to that Rs. 360 for the purchase of drugs. And if he maintains a midwife, he gets Rs. 100 extra.

17231. Can you give me roughly an idea of the total number of men who are receiving such subsidies in the Presidency?—The sanctioned scale is three to each taluk. I think we have got something over 200 now.

17232. You have over 200 men receiving such subsidies?—Yes. I am speaking from memory. I think the figure is something above 200, 260, or so.

17233. This scheme of yours, of subsidies in the Presidency, is working well?—Yes, in some places it is working very well indeed. In other places it is not working well. But a good deal depends on the individual. If he is going to succeed, the medical practitioner must make private practice, because he cannot live on Rs. 30 a month; he must have private practice and earn more. You cannot make private practice at once; you can make private practice by getting your name known; you have got to work for one or two years before you really make much of private practice. The scheme has not been going long enough yet. I cannot say how far it is going to succeed. The practitioner must make sufficient to live on.

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17234. In places where it is not showing signs of success as you just now mentioned, have you got any indication as to why it is not likely to succeed?—It is only my conjecture. I think it is a good deal due to the individual.

17235. Chiefly due to the individual owing to the local circumstances?—I think it is mainly due to the individual. He must go about and try to get himself known; he wants a lot of energy.

17236. *Sir Henry Lawrence:* In the diet you have given us here for the Indian troops, you say 1½ oz. of sugar. Is sugar a necessary item of diet?—You must have carbo-hydrate in some form; it is not essential that it is in the form of sugar; it is a very useful article of diet.

17237. Do you know whether, as a matter of fact, the ordinary ryot does take any sugar in any form at all?—I could not say that.

17238. In jails, is it kept as a portion of the diet?—Sugar is not an article of diet in the Madras jails. As long as they provide carbo-hydrate in some form, it is not necessary that it should be in the form of sugar.

17239. *Sir Ganga Ram:* With reference to the question which Mr. Kamat asked you, is this subsidy governed by qualification only, or by the place from which the medical practitioner comes?—Entirely on qualification.

17240. Not by the place; because some towns are very paying and others are not?—This is for rural areas.

17241. Some of the rural places also are very paying. I suppose the delta areas are paying?—It is all based on qualifications.

17242. Is any scale of fees laid down for them?—Yes.

17243. Is there a sufficiency of nurses in this Presidency?—You mean for the hospitals?

17244. Yes?—No, we have not enough. We train them by degrees. There is a scheme for training.

17245. Is there a scheme for training here?—Yes.

17246. Could I get a copy of that scheme?—I shall try to send it on. We train nurses, we train Indian women as nurses; we also train midwives.

17247. On page 731 you have given a table showing the yield. Is that with the idea of proving whether there is sufficient grain or not?—I was asked that question.

17248. What was in your mind when you gave these figures?—I was asked.

17249. Unless you tell us how much of it is export and how much is import, we can derive no conclusion whatever?—The letter I got in regard to the questions did not require that.

17250. I wish you would give us the export and import? We cannot judge whether you grow sufficient food for the people or not?—I had a very short time in which to prepare my memorandum.

17251. Amongst the *dals*, you have omitted two *dals* which have got great nutritive value. One is *mash* and the other is *pea* dal. And in both these, the vegetarians put down the nutritive value as compared with meat as 14 to 15. So, I thought you would have mentioned these two *dals*?—I do not think they can be grown in very large quantities. None are grown as far as I can see.

Mr. Kamat: Might I mention here that one of the *dals* to which Sir Ganga Ram referred, which is called *mash*, is referred to in the Hindu books as having the nutrition value of meat?

17252. *Sir Ganga Ram:* On page 733 you have given figures. Are they added together or not? For instance, under Bhutias (*dandywallas*, coolies, etc.) it comes to 58 oz. Is that all added together?—With everything added together, it comes to 58 oz. That is what they get. It is very hard work.

17253. Even in the Indian troops' diet, are they to be added together?—Yes.

17254. *Sir Thomas Middleton:* You have referred to the need of a nutrition institute for the Madras Presidency. After listening to your evidence and that of Colonel McCarrison I do not think anyone would be disposed to question the need; but, in view of the present position of nutrition studies in

India, do not you think there is something to be said for an All-India institution in the first instance?—I think there is a great deal to be said for it. The attitude I take up is this, that I feel the urgency of the problem is so great for this Presidency that I want to get a start made. I am not in the least opposed to that principle.

17255. Listening to the evidence of Colonel McCarrison it seemed to me that the value of his work was very largely due to the very wide range over which it was possible to extend his observations?—Quite.

17256. You think that if the institute were definitely for the Madras Presidency, there would be no danger that this width of observation would be restricted; you think it would still be open to Colonel McCarrison to collect data from All-India?—If we get for that a grant from the Indian Research Fund Association, that grant would be allocated not solely for the needs of this Presidency alone; it would be for India.

17257. So that while the fact remaining in Madras, the institution would work for India?—It might work quite well for the whole of India.

17258. Sir Ganga Ram has drawn attention to the very generous diet of the Bhutias?—Yes, it is generous.

17259. They are doing fast work?—They are doing very heavy lifting work up and down hill, doing a tremendous amount of work.

17260. Can you tell us anything about their health? Are they healthy?—I do not know the Bhutias at all, but the men you meet up in the other parts of the Himalayas, like the rickshaw coolies and the people who carry those enormous weights, I am told, though I have no absolutely certain information, have a very short life.

17261. Yes, I heard that; that is why I asked you?—They are very fine people physically while they last.

17262. Their diet is rather more generous than is allowed for an Army on forced marches?—Yes.

17263. Then coming to the other end of the scale, you have got a diet here for the East Coast agricultural workers who suffer from beri-beri?—Yes, and other diseases.

17264. Taking the minimum quantities eaten, one of the diseases from which they must suffer is starvation, because their total intake of energy I estimate at about 2,500 calories?—It is a starvation diet.

17265. It is quite impossible for any man who is doing manual work to maintain himself healthily on so low a diet?—Quite.

17266. I notice that you say one-third of an ounce of meat is eaten in 10 days; do you mean one-third of a pound?—No, I do not at all; they only get a certain amount of meat once in 10 days and the average comes to ⅓rd oz. per day.

17267. But the one-third ounce means the daily average?—Yes, they get one feed once in 10 days.

17268. You have noted the questions we put to the cultivator last Sunday at the village of Palal?—Yes.

17269. One asked particularly as to the dietary because that man whom we questioned seem to be a well-nourished man?—Yes.

17270. I see that his dietary would give about 3,000 or 3,100 calories?—Yes.

17271. That is just about what would be required as far as energy is concerned, but, as you point out, his intake of protein is much too low?—Yes.

17272. He showed indications of it?—He could increase his protein and reduce his expenditure.

17273. *Dewan Bahadur Raghavayya* You will probably be surprised to hear that the diet you have given as the diet of the agricultural worker on the East Coast is really a better diet than he actually gets?—This diet is actually

taken from a group of people who are suffering from beri-beri and other diseases; it is not a made-up diet.

17273*a*. That is the diet prevailing, I take it, in the two or three delta districts in the North-East of the Presidency, but in the poorer districts the ordinary diet of the poor cultivator does not include *dal;* all the pulses he grows are exported, and he does not get even that small quantity of meat that you have allowed for him. The whole of his milk and milk products go to the nearest town; the *ghi*, butter and the curdled milk; as against that there is this point, that he does not eat rice, he eats millets mainly?—His diet consists of millets, chillies and salt and an occasional dish of green tamarind leaf made into a paste with chillies and salt.

17274. As to the suggestion of fitting up hand pumps to wells, do you not think there will be a practical difficulty in working the scheme, because the experiment of having two wells with pumps has been tried in this Presidency and it has not been a success. The difficulty is to maintain the pumps; the pumps get out of order very quickly, the villagers have not sufficient knowledge to keep the pumps in order, it becomes necessary to have a large supply of mechanics among the villagers who are interested in maintaining the hand pumps?—Yes, I have been aware of that objection for some time about the pumps going out of order.

17275. In view of that difficulty perhaps the provision of improved wells with watertight platforms and good drains might be considered?—Yes, provided everybody does not bring his own bucket and rope.

17276. Yes, that is a difficulty; here people would insist on bringing their own buckets at any rate. Those dams that are put up across rivers are put up when there is only a spring flow in the river?—It is the hot weather flow.

17277. To *bund* up and collect the water?—Yes.

17278. *Professor Gangulee:* What is the position in the Madras Medical College in regard to clinical teaching?—The position with regard to the Madras Medical College is as it was practically all over the world up to a few years ago. The old idea was to give the student a grounding in anatomy, physiology and pathology in the first two or three years; then he passed an examination in anatomy and physiology and he had done with these subjects for good; he then went into the wards. The modern idea is to bring the study of anatomy and physiology into the wards, so that a man studies his group of diseases from every aspect, anatomy, physiology, prophylaxis, etc., at the same time.

17279. So that he gets a synthetic view?—Yes, that is the whole point. That system has not yet been started, but we are hoping to start it.

17280. *Mr. Calvert:* Would you dare to venture the view that amongst the Indian troops in this country those with the *atta* ration are stronger and healthier than those with the rice ration?—I am afraid I have no information about that.

(The witness withdrew.)

Major-General F. H. G. Hutchinson

APPENDIX.

The need for greater hospital accommodation in Madras.

It has been suggested that too much is spent on hospitals and too little on public health. The truth is that too little is spent on both aspects of health. An increase in expenditure on public health will not reduce the demand for hospital treatment.

In England and Wales there is rather over one hospital bed per thousand of population. The figures in this Presidency is 0.14 per 1,000. Even if public health in this Presidency advances to the level in England we shall have to increase hospital accommodation. The following table shows this clearly.

—	Number of beds.		
	England.	Wales.	Madras.
General	48,201	2,259	8,643
Isolation	36,400	1,800	420
Tuberculosis and Sanatoria	21,262	1,393	210
Lepers	...	...	1,052
Mental diseases and infectives	132,579	6,543	1,086
Poor Law	116,607	3,628	Nil

The population of Madras is greater than that of England and Wales combined.

Major-General F. H. G. Hutchinson.

Mr. HERBERT CHAMPION, M.A., Principal, Teachers' College, Saidapet (Madras).

A Note on Education—general and Agricultural.

I.—The problem stated.

The main criticism levelled against higher education in India is that it leads only or mainly to clerical, administrative and professional occupations. While admitting the pertinence of this criticism, I do not think that it is always made with a due sense of proportion. In England the large majority of parents who send their sons to secondary schools do so in the hope that they will secure "black-coated" employment, employment in a clerical or professional calling. In this sense the effect of higher education in attracting boys away from the land and towards professional callings is the same in England and in India. There is however this difference between conditions in England and in India. In England, notwithstanding the inevitable drift of educated persons from rural to urban life, there exists the racial instinct and natural inclination of large numbers of Englishmen of all social and intellectual grades, which urges them towards an outdoor life and to work on the land. The racial instinct and natural outlook of the educated Madrasi however is away from the land and towards an urban indoor life. Again, in England, of the educated persons who by force of circumstances lead an indoor life, there are large numbers of both sexes who turn to nature in their leisure and who have built up a large body of nature knowledge. In India there is very little nature knowledge, for the reason that the educated Indian takes no interest in nature as such. Added to this, there is the inborn objection of the higher social classes to manual work. Briefly, while there are the natural outdoor interests of Englishmen and the natural pull towards the land to counteract the effect of higher education in England, the natural outlook of the Indian consorts with the influence of higher education, both urging him from the land to urban life, to clerical and professional occupations.

2. The problem, as I conceive it, is to turn the minds of the people from professional and clerical careers to a life on the land. In so far as the high school has a part to play in this task, the problem is as follows. At present people can conceive of only one form of education—an education leading to traditional University courses of study or to clerical occupations, an education which does not lead, either directly or indirectly, to outdoor work in general or to work on the land in particular. The problem is to devise a form of education which shall be liberal and cultural to the extent that the existing form of education is liberal and cultural, and which at the same time will attract educated persons to a life on the land. To state the problem thus is to realise that the process will be a slow one, and that higher education in India will have to perform the double function of giving the pupil a liberal education and, in attracting the pupil to the land, of doing the work that in England is being done by the natural outlook of the Englishman.

3. It is sometimes argued that an increase in the efficiency of general education in its present form would result in an increase in agricultural efficiency. I believe this view to be unsound. In the first place, the possibility of increasing the efficiency of education—higher, middle or elementary—is extremely problematical. There is no movement towards any increase in efficiency: on the contrary, the interest of the public in education is generally directed towards a lowering of educational standards. I believe that most thoughtful educationists in this Presidency would agree that the quality of education imparted in secondary (high and middle) schools is going down. The present pressure in secondary education is for an increase in quantity in respect of the number of youths turned out by high schools, and not for improvement in the quality of instruction. I believe that pressure in this direction will continue to be exerted, and that it will continue to be effective.

4. Again, even assuming the possibility of securing an increase of efficiency in education, it by no means follows that such efficiency will react on the efficiency of agricultural practice. It is unsound to argue that efficiency in one direction will react on efficiency in another direction unless the two are closely related in character. School education in Madras has a very limited sphere of efficiency: it is largely clerical, verbal efficiency, and not the practical, business efficiency required in the agriculturist.

II.—Suggestions. (a) The teaching of agriculture in schools.

5. In view of the fact that the kind of efficiency inculcated by education in Madras is not and in existing conditions cannot be the kind of efficiency required in agriculture, I venture to express the view that the only way to increase agricultural efficiency is to teach agricultural efficiency in the schools—not an efficiency allied to, or that may be expected to result in, agricultural efficiency, but agricultural efficiency itself. In a word, I believe that the science, practice and business of agriculture should be taught in the schools.

6. This needs explanation. I do not mean that schools should aim at producing finished agriculturists, or that it is possible to include a complete course of agriculture in the curriculum of any grade of school: schools are for general education, and they should abstain from the pretension to qualify their scholars for the detailed tasks of the agriculturist; and on practical grounds the quality of general education now imparted is so poor as to leave very limited time for anything outside general education. My suggestion is that in the middle school the boy should receive a course of selected lessons in agriculture appropriate to his physical capacity and mental attainments. In the high school the principle would be the same—a course of selected lessons in agriculture appropriate to the physical and mental capacity of the pupil. In both stages the work should be definitely and organically connected with the vocation of agriculture: *i.e.*, the agriculture taught in schools should, within the limits imposed by the physical and mental capacity of middle and high school pupils, be the kind of agriculture practised by enlightened agriculturists.

7. In the elementary school the work would take the form of school gardening—not the kind of garden work that is, as at present, largely limited to the observation of plants grown in school gardens, but the cultivating by enlightened, systematic methods of the vegetables, flowers and fruits that can and should be grown in the now generally neglected gardens attached to Madras households.

8. In both elementary and middle schools this work should have a backing of nature study. The difficulty here is that in the Madras Presidency there is very little nature knowledge. The result is that in the elementary school nature study means largely the purposeless observation of plant and animal life, and in the middle school the study of botany and botanical classifications, which is inevitably more academical and scholastic than practical, and which takes the pupil away from nature instead of bringing him nearer to nature.

(b) Special schools of agriculture should be established.

9. The suggestions made under this head have the double purpose of directing boys from the clerical, professional life with which they are at present obsessed and of opening up avenues of employment more suited to their natural capacity, and of increasing agricultural efficiency.

10. To recommend the opening of agricultural schools is insufficient: the important point is that the boy should be admitted to a special course in agriculture only after receiving a complete course of general education. There are two points in the general secondary school course at which a pupil has received a general education complete in itself, (1) at the end of the middle school stage, and (2) at the end of the high school stage. At each of these points pupils unfit or unwilling to proceed to higher stages of general education could be diverted to definite vocational training such as agricul-

tural training. My suggestion is that the Agricultural Department be required to frame schemes of instruction in agriculture suited to the mental and physical capacity of boys who have passed through (1) the middle school stage and (2) the high school stage. So far as I know, the Agricultural Department has never considered its educational schemes from the point of view here suggested.

11. The suggestion made in paragraph 10 above needs qualification. Agricultural schools, if opened at the present time, would almost undoubtedly fail to attract pupils. What is wanted first is a preliminary training which will turn the minds of the pupils to the vocational possibilities of agricultural schools. Such preliminary training is provided in the suggestions for the teaching of practical agriculture made in paragraphs 5 and 6 above. I would recommend that agricultural schools be opened only after the scheme for teaching practical agriculture in middle and high schools has been in operation at least two years.

(c) *The giving of an agricultural bias to the general school curriculum.*

12. When the schemes of instruction in agriculture referred to in paragraph 10 above have been framed, the Agricultural Department should state what kind of general education they require for boys who are later to seek admission to the special agricultural schools: *e.g.*, I imagine that a boy passing from a general high school to an agricultural school should along with the general school subjects, have received a more than ordinary grounding in chemistry, botany, elementary physics and manual training. It will then be for the high school authorities to consider the desirability of fitting their curricula to these special needs, in other words, of giving a vocational bias to their curricula while preserving the general liberal character of the course as a whole.

13. Much has been made by critics of the present system of general secondary education of the necessity of giving a rural or agricultural bias to the curriculum. In my opinion, a bias that leads to no practical end serves no purpose.

(d) *The exclusion of unfit pupils from secondary schools.*

14. Schemes framed on the lines suggested above should in due course have the effect of attracting pupils in increasing numbers from an indoor life to a life on the land. This however is not the whole of the problem. Secondary education in this Presidency is seriously handicapped owing to the presence of large numbers of pupils who are naturally unfitted for a middle or high school education, and whose education should have ended with the elementary school. While these pupils continue in secondary schools, it is difficult to conceive of any kind of real efficiency in secondary education, either general or agricultural efficiency.

15. This situation however cannot be entirely condemned. The only form of education which has any vocational value is secondary education, and parents cannot therefore be blamed if they press for the admission of their children to secondary schools.

16. The first step in this problem is to improve the quality of elementary education so as to make it worth while from the point of view of the parent. Personally I believe that this improvement of elementary educational standards is not only of the first importance, but that it should take precedence of the extension of elementary schools. To bring into existence a large number of elementary schools manned by teachers of quite inadequate educational attainments is to exclude all possibility of afterwards raising the standard of elementary school work to any appreciable extent, in the sense that it is impossible to raise to any appreciable extent the educational attainments of these ill-qualified teachers. But to start with elementary schools giving a reasonable standard of education and afterwards to extend the number of such schools would be to establish a system of elementary educa-

tion worth while. I am aware that there are other considerations, *e.g.*, political considerations which require that every voter shall be a literate person. In any case, we have gone too far in the direction of extending the number of unsatisfactory elementary schools, to be able to tackle the problem *de novo.* But it is strictly relevant to the question of general and agricultural efficiency to recommend at the present time that the question of improving the standard of elementary education is of equal importance with the question of extending facilities for elementary education, and that the former should not be lost sight of in preoccupation with the latter.

17. Coming to secondary education, it should be a general principle that secondary schools are not for the education of the masses, but for the education of only those who are naturally fitted to receive a secondary education: in a word, that admissions to secondary schools should be on a selective basis. There are however other considerations. The adoption of this principle would mean that large numbers of boys drawn from the lower social classes would be excluded from secondary schools. With a view to encourage the participation of these classes in secondary education, there is in the Madras Educational Rules a list of backward classes, and any boy belonging to one of these classes is admitted to a secondary school on payment of half the usual rate of tuition fee. The effect of this concession has been to increase the number of unfit pupils in secondary schools.

18. I would first lay down the selective principle enunciated in paragraph 17 above. I would then abolish the list of backward classes together with the fee concessions granted to backward classes. In its place I would establish a liberal system of scholarships on a communal basis, the aim of which would be to discover talent in every class of the community and encourage it to enter secondary schools. Such a scheme would be far more conducive to the interests of the country and of agriculture than the existing arrangement, which admits all and sundry to secondary schools and which makes no attempt to discover talent.

19. There is another aspect of this problem. Many boys fail to fulfil the promise of their early years. Added to this, promotions from class to class in secondary schools are laxly made, one reason being that considerable pressure from parents and the public is brought to bear on headmasters with a view to secure the promotion of unfit pupils. The result is that high schools contain large numbers of pupils who should have diverted from secondary education at an earlier stage in the school course. I would recommend the imposition of a public examination at the end of the middle stage, only pupils who pass this examination being admitted to the high school. For pupils who fail to pass this examination and for pupils who do not wish to proceed to a high school there would be the agricultural schools referred to in paragraph 10 above.

(e) *The administration of the scheme.*

20. I anticipate that any scheme for the advancement of agriculture or agricultural efficiency will have very limited effect unless it receives the whole-hearted active support of administrative authorities from top to bottom. If the sympathy of the public is to be enlisted a good deal of intensive propaganda will be necessary, and this propaganda should start from the top of the administration.

21. There is another point in this connection. Educational movements, started in a flush of enthusiasm, have a habit of being whittled down and ultimately lost sight of, in the preoccupation of administrative authorities with other movements. To avoid this, I would recommend the creation of an Advisory Board of Rural and Agricultural Education. This should be composed only of professional educationists and professional agriculturists in sympathy with the recommendations of the Royal Commission. Its membership should be limited—from 5 to 7 members would be enough. And it should be sufficiently influential to ensure that its recommendations secure adequate consideration at the hands of Government and the departments concerned.

Mr. Herbert Champion.

Oral Evidence.

17281. *The Chairman:* Mr. Champion, you are Principal of the Teachers' College, Saidapet?—Yes.

17282. You have put in a very interesting note for which we are greatly obliged to you. Do you want to make any general statement at this stage?—I do not think so.

17283. I have read through your note of evidence very carefully and it appears to me that you have made your views quite plain. I want just a little elucidation on one or two points. In the first place, I think it is worth while pointing out, as, I think, you yourself have pointed out, that this problem of discovering a system of education which will equip the agriculturist in his business of tilling the ground and not encourage him to go into the town is world-wide. It is not solely an Indian problem?—Quite so. I have no doubt that you would get the same gravitation of educated persons in England to an indoor life as a result of education.

17284. I suppose it is due to better remuneration of urban occupations and the so-called amenities of town life which, although many people grumble at them, are liked by a considerable majority?—And also to the respectability of the urban life.

17285. There is in this country a traditional dislike to any form of manual labour which does not exist to the same extent in occidental countries?—Quite so. I think people do not realise that so far as education has any part in this matter it has to fulfil a double function. It has to fulfil the function of imparting a culture and at the same time doing the work which in England is done by the natural outlook of the Englishman.

17286. I take it that the ideal education of an agriculturist would have this effect. It would teach him to read, to write and to do arithmetic and thus equip him to look after himself in his commercial dealings and in his marketing?—That is so far as the elementary education is concerned.

17287. Then, so far as agriculture goes, any further education would improve his value as a citizen and teach him to live better in every way. And then if he had any technical education, which is quite a different matter, it would teach him how to better the purely traditional and empirical methods of agriculture in vogue in the district in which he lives?—And if it is a proper kind of technical education, it would show him the possibilities of agriculture as a vocation. It would do something to modify that natural outlook which he has towards urban life. The kind of technical education which I envisage and which I have tried to describe here would attract him to the land.

17288. You would probably agree with me that no one in any country has yet discovered in any system of education as such the means of keeping the sons of the agriculturist on the land?—No; the same problem is being discussed and studied in England.

17289. Would you agree with me that as regards the elementary education, nothing should be allowed to detract from the importance of literacy as the first objective?—I quite agree with you. That is the first objective.

17290. And the years of learning are so short and unfortunately the standard of teaching so indifferent in most cases that there is very little time for individual teaching during the elementary stage?—I think that is rather too general a statement. The elementary school works from 4 to 5 hours a day. You cannot keep a boy at reading the 3 R's for more than three hours a day. He is after all a child. All that you can do is to give him 40 to 45 minutes' teaching per hour of the three hours. For the rest of the day he must be engaged in doing something else.

17291. How long do you reckon the ordinary child at an elementary school has school hours other than those necessarily taken up by the three R's? About an hour a day?—No, more than that. A school day consists of at least 4 hours. Many of them go on for 5 hours, but we will take the minimum

of 4 hours. He has three lessons of 45 minutes, which is two hours and a quarter, even if we leave out an hour and three quarters for other subjects or about an hour and a quarter excluding intervals and the time wasted.

17292. Just over an hour?—Yes.

17293. You proposed to use that for nature study or some such thing?—Not all of it. I propose that in that hour, which is an hour a day, nature study and practical economic school gardening should be taught.

17294. And other handicrafts?—I do not think I can make any definite recommendation on that point at this moment. I would recognise the paramount importance of school gardening.

17295. Has the average Indian boy of the rural classes handy hands in doing things?—I should say not.

17296. It would be rather a good thing to try and encourage that?—It would be certainly better and the sound gardening which I have visualised would insist on his using his hands.

17297. On this question of middle schools which is one of the principal difficulties as you move up the scale, do you think there is a demand for purely vocational vernacular middle schools? There is no use in trying to force it down the throats of parents. If there is no demand you cannot make a success of it?—I should like to know the connection of this question of vernacular middle schools. There is a demand for them in Madras. Theoretically there is a demand for them, practically there is none. Theoretically there is a demand for less English and more of the mother tongue. I have tried to introduce a policy of that kind in the school which is attached to my own college. I received a good deal of opposition from the parents. They want no time taken away from English.

17298. So that you agree with me that when you come down to practice, which is after all the important thing, there is no demand for vernacular vocational middle schools?—When we speak of middle schools, all subjects except English are taught there through the vernacular.

17299. Let us leave out vernacular. Let us say vocational schools in which English is not taught?—There is no demand for that. Personally I would be against the vernacular middle schools.

17300. The attendance at such schools would practically bar the promising boy from the University. He would not have learnt English early enough?—It would. That is one thing which we would have to be very careful about. We should not in this way penalise the boy if he wants to go to the University.

17301. People talk about the public drawing their own lessons from the enormous mass of unemployment which unhappily causes so much distress amongst persons who have even taken degrees, the educated youths of the country. Do you see the slightest sign of that lesson being learnt?—The sign is all in the other direction.

17302. There, again, the theory is not supported by the practice?—No.

17303. I wanted to ask you what are your views as to the training of teachers. Have you got such a thing as a normal school situated in a rural area in this Presidency?—Not many.

17304. And you have them also in urban areas?—Yes.

17305. Is it your experience that the fact that they are situated in rural areas tends to make the teachers better equipped for teaching rural classes?—No. They all follow the same course whether they are in rural or in urban areas. In this connection I should like to point out that I do not think you can discriminate between urban and rural areas to the same extent as you can in England. There are very few real cities in the Madras Presidency, possibly at the most four. When you hear of towns of 80 or 90 thousand people, they are simply congeries of villages.

17306. I am thinking, of course, of equipping teachers with the knowledge of nature required to teach nature study and with the modern method

of teaching nature study. You will probably agree with me that the teaching of nature study is not so easy as it is taken to be?—I do not think you can do anything in the training school to equip a teacher with nature knowledge. All that you can do in the training school is to teach him the methods of handling this nature knowledge.

17307. I think the rest of your note is very clear. There are one or two subjects not included in the note about which I should like to ask you one or two questions. Have you any views about the education of females?—I am afraid I have none which would be of any use.

17308. Is there any sign that the demand for education for girls is going up in the Presidency? It is available, of course?—There are many facilities.

17309. Are they being taken advantage of?—Not to the full extent in this sense. There are many girls' high schools situated throughout the length and breadth of this Presidency. My experience is that there are a very few of these high schools which are at full working strength. You will find in the top classes two or three girls in each class.

17310. Have you any experience of adult education?—We are considering the scheme here in Madras. The scheme I have in view is a scheme for adult education on a co-operative basis. In the training college of which I am in charge there are 106 graduates under training as teachers and about 90 matriculates, people who have passed through the high school. My idea is that when they revert to their schools they should run schools for adults. Now, the difficulty is that when a man has to do a day's work, he obviously is not fit to run a night school. Either his night school is neglected or his legitimate work in the day school is neglected. So the scheme we have in Madras is that 4 or 5 teachers should join together, graduates and under-graduates, and should run the school in combination; that is, one teacher should be in charge of it, say, one night a week. This arrangement would not interfere with their legitimate work in the day school and at the same time it would enable us immediately to bring into existence night schools wherever there are at present secondary schools. As we have about 500 secondary schools in this Presidency, we ought to be able in a very short time to bring into existence at least 500 schools for adults.

17311. Do you think that you have at your disposal all the past experience in this matter in this Presidency?—I do not think so.

17312. There must have been experiments made?—Yes.

17313. Are there records of these experiments?—So far as I know there are not. The only record we have in Madras is a record of an experiment that is being carried out in the Punjab.

17314. It deals more with the Punjab than with your Presidency?—Yes, it does unfortunately.

17315. You will agree with me that experiments must have been made. That is actually the case?—Yes.

They have been allowed to fall through and the valuable lessons learnt have been lost.

17316. I suggest it to you that the machinery for recording these experiments is faulty. Are you quite satisfied that on the administrative side, the records in the Secretariat would be available?—All that we can do in the Education Department is to look into the records of the Secretariat that have been sent to us.

17317. You no doubt recognise how severely your department or some other agency might feel the want of proper records because after all failures very often are more valuable than successes?—Quite so; I am not sure that it is a question of the availability of records; I am rather inclined to think that too much direction or control is attempted by the Secretariat. In the last paragraph of my note I have suggested that for the purpose of the Agricultural Department there should be a Board of Rural and Agricultural Education. They would keep themselves in touch with records and experiments which are being carried on.

Mr. Herbert Champion.

17318. But they cannot keep in touch with records that do not exist. You know under the departmental system with which we are familiar in Great Britain, although everybody laughs at red-tape, at least the thing is tied up and put somewhere and you know where you can get it?—Yes; I think what happens is, the question of adult education comes up, then the man looks up to the records that exist in the office on adult education and they are put up to the officer concerned, the Secretary to the Government, who sends them to the Director of Public Instruction.

17319. And do you agree with me that experiments must have been made? Do you also agree that no record is available for you?—I presume that experiments have been made and records of those experiments exist.

17320. Where are they?—That I do not know.

We should like to have them if you find them.

17321. *Dewan Bahadur Raghavayya :* Mention is made of adult education in the Administration Report on Public Instruction?—That is work that has been done in Madras.

17322. *The Chairman:* That is not a record of past failures?—No.

17323. If you or your department can send us those we should be greatly obliged?—I shall try and find them.

17324. *Sir Ganga Ram:* Do you teach your teachers scale drawing?—A boy in school is taught elementary mathematics throughout his high school course before he becomes a teacher. In that connection he does scale drawing.

17325. Elementary mathematics has nothing to do with scale drawing. Drawing is different from mathematics. If you have a map of India on a scale of 100 miles to an inch and ask him to reduce it to 50 miles an inch, would he be able to do it? Do you teach him how to do it?—Would that be connected with surveying?

17326. No; every man ought to be able to do that. You do not teach that? —I think there are two opinions about it, that every man should have a knowledge of scale drawing.

17327. Do you teach boys books on self-help and self-respect? I tell you why. Some people come to me and ask me to appoint them as *chaprasis*, but they say 'we will not do *chaprasi* work'. They bring letters and bring everything else but say 'we do not do the *chaprasi* work'. Do you teach them small elementary books of which there are plenty?—Smiles' *Self-Help*, I suppose, exists in every school in India.

17328. That is what I was referring to?—If you asked me whether we give them definite lessons on self-respect and self-help, I say we do not.

17329. Self-respect they learn themselves without your teaching. As regards your proposal for gardening, do you not think skill in subjects like carpentry would be better?—No.

17330. Why?—It is not sufficiently closely related with the object which we want to achieve and that is to turn the boy's attention to the land, to attract him back to the land.

17331. Everybody cannot be attracted to the land?—That is the problem.

17332. I say simple elements of carpentry would also bring him ideas of scale drawing. He would learn at once that the chair, for example, is 18 inches high?—He could tell you that already.

17333. Would he?—Yes; he could tell you that the chair is 18 inches high and he could do a scale drawing; but if you want him to reduce the map of India by half he cannot.

17334. This is much simpler than that. All I say is that the system of reducing simply by squares is much simpler. It is a very simple process?—Then he could do it.

Mr. Herbert Champion.

17335. *Sir Thomas Middleton:* Taking first that question which Sir Ganga Ram has raised about carpentry, you are aware of course that it is a subject which has been very much pushed in England in primary schools?—Not carpentry as such; but wood work. We have many schools in Madras. I have a manual training centre attached to my college which turns out from 15 to 20 teachers of wood work every year.

17336. My only point was that high educational value is now attributed to the subject in the primary schools in England and I wondered whether the same value was placed on it here?—This manual training of which you are speaking which includes wood work or elementary carpentry is only in the higher classes of elementary schools. Obviously a boy of 9 years cannot handle a hammer or a saw. It is only in the higher classes that the manual training ends in wood work; it starts with card-board work in the lower classes. But I do not think it is possible that this elementary carpentry should be done as part of the gardening.

17337. It is combined with gardening?—That is it.

17338. You agree that agriculture should have a place in both the middle school and in the high school?—Yes.

17339. At what age would you introduce the subject in the middle school?—The middle school extends from Form I to Form III. The average age now for Form I is 12 to 13; the average age for Form II is 13 to 14 and for Form III, 14 to 15. I would introduce it in Form I. I think it should be possible to introduce it; but I do not commit myself to the definite statement that it should be introduced in Form I. I should be quite content if it were introduced in Forms II and III.

17340. Then similarly in the high school what is the average age?—From 15 to 18.

17341. And would you say that boys who have been through the agricultural course in the middle school and who proceed to high school should continue the agricultural course?—Yes.

17342. Would you also in the case of those boys who have not taken up agriculture in the earlier days, introduce it in the high school?—I see no reason why it should not be.

17343. How many hours a week of instruction have you in your mind?—I was thinking of 4 periods of 45 minutes each, that is 3 hours a week.

17344. That would be for the class room instruction; is there additional outdoor work?—I was thinking of the class room and outdoor work.

17345. Have you reduced your proposals to the form of a syllabus? Is there any draft syllabus in existence of such a scheme?—No; there is not.

17346. Do you think there would be any trouble arising from the absence of text-books?—Text-books would be unnecessary; we do not attach very great importance to the necessity of text-books.

17347. Would it be possible for such classes to make any satisfactory progress unless really suitable text-books are in existence?—My idea is that these classes would be taught, in the high school, by agricultural graduates who had passed through the Agricultural College, Coimbatore; they should not be in need of text-books; and in the middle school agriculture would be taught by teachers who had passed through the Secondary School Leaving Certificate course and who had sufficient knowledge of agriculture to handle this subject in the middle school; so that text-books, I think, would not be necessary at the outset.

17348. I should suppose that if you had teachers who had a special aptitude for this class of teaching they would succeed without text-books; but that the average teacher whose services you could command must be supplied with a series of text-books?—I imagine that we should employ only such teachers as had a special aptitude towards that subject as we do at present. Our teacher in mathematics is a graduate in mathematics and he has a special aptitude for it.

Mr. Herbert Champion.

17349. He has a special aptitude for getting it up but not necessarily for teaching?—You can train a man to be a teacher; you cannot train him to be an excellent teacher, but you can turn bad material into fairly good material, teaching material.

17350. Then your conclusion is that the absence of text-books does not necessarily make your scheme impossible?—No; I would not wait for the text-books to come into existence.

17351. *Dr. Hyder:* Do you think, if you had been a teacher to Alfred the Great or Akbar, you could have improved the intelligence of such people?—I might not.

17352. I put this question to you, because you are all for selecting pupils. I myself thought that the business of an educationist was to improve the student. Do you not think that if the boy was naturally gifted no educationist would do any good to him?—Yes, I think he would.

17353. I quite see the task of the educationist would be very much easier and the pupil might outstrip the teacher. I thought the educationist was there to raise the general level of intelligence?—The "educationist"? We are talking of the school master; we are not talking of the "educationist" which is a larger term.

17354. I wanted to be polite. Let us say the school master. He is there to improve the minds of the boys who are under his care in the school?—That I take to be his task.

17355. Since when have the English acquired a love for nature study; is it racial or is it a question of training?—I think it is racial.

17356. Two hundred years ago no one would look at the Alps. Is that known to you?—But they would look at nature in England.

17357. I doubt that very much?—I should like you to ask your colleagues on the Royal Commission. I do not think it is education that has given the thousands of Englishmen an interest in nature; I think it is something in their blood.

17358. *Professor Gangulee :* You do not think it is education that has given them that outlook?—I think education is given them from nature.

17359. *Sir James MacKenna:* Do the teachers trained in the Teachers' College go back to middle schools?—The greater number go back to the high schools; a part go back to the middle schools.

17360. You have no college-trained men in the primary schools?—No.

17361. The primary school teachers are rather poor material?—Yes.

17362. *Professor Gangulee :* You said that there are only four towns in this Presidency?—Four cities, as cities are generally conceived.

17363. Do you think that most of the pupils are from the rural areas?—Most of the pupils in the elementary schools are.

17364. And also in your college?—Are you thinking of the training college?

17365. Your Teachers' College?—That is the training college.

17366. From "rural" would you exclude a town like Tinnevelly, which has a population of 70,000 or 80,000 and which I think is more a collection of villages than a city? Would you exclude places of that kind? What is the population?—Seventy thousand.

17367. Those are merely a collection of *peths*?—Yes. They are certainly villages. The teachers who come from there are drawn from rural areas.

17368. Then, you go on to say: "The racial instinct is away from the land." In the first place, how do you explain this tendency, this racial instinct?—Racial instinct is a very difficult thing to explain. I cannot explain the racial instinct of the Englishman towards the land.

17369. What had you in mind when you put in the words "racial instinct"?—What I had in mind is explained there, that the majority of Indians take no interest in nature as such.

Mr. Herbert Champion.

17370. Are you familiar with Indian literature, poetry, etc.—Yes, a certain amount of it.

17371. I do not press the point. Is it your experience that there is an increasing tendency towards the cleavage of the urban and rural population? You deal with teachers; they are all adults; you come in contact with them I suppose?—Yes.

17372. Do you find that their mind is drawn away from the rural life? Do you find that tendency?—I do not understand the question.

17373. People born in rural parts are educated in your schools under the University of Madras. What psychological changes have occurred in them with regard to their outlook?—Psychological changes?

17374. Yes?—The change is that their outlook is urban; they look towards the town for a means of livelihood and interest.

17375. Are they from the rural areas?—They are people born in rural areas and brought up in rural high schools. Having passed through the examination they look towards an indoor life, their personal interest, apart from their pockets, is towards an indoor life.

17376. An urban life?—Yes.

17377. Do you think the system of education has played a part in creating this state of things?—I think it has.

17378. Have you any experience in agricultural education?—Yes, a certain amount.

17379. Do you know of any attempt in this Presidency to introduce agriculture in secondary schools?—Yes.

17380. Where was the experiment made?—Madura and Chinglepet.

17381. You are referring to experiments carried on by missionaries like the Rev. Mr. Sutherland. Do you know of any effort on the part of Government to start agricultural middle schools?—Yes; we have agricultural middle schools under the control of the Agricultural Department. I know of one at Anakapalle, and one is to be opened at Chittoor, as soon as teachers are available.

17382. Did you pay any visit to these schools?—I was on the committee that organised these schools.

17383. *Mr. Calvert:* Madras of course is mainly an agricultural Province. Does your Madras University take the lead in encouraging the study of Madras rural problems?—No. There used to be in the Madras University a Professor of Economics, Dr. Gilbert Slater; however, that appointment has come to an end.

17384. I understand they had a three years' course in rural economics, and now it is two years?—I think it is.

17385. I gather you are rather in favour of separating the work of rural education from that of urban education?—No; I am not.

17386. Would you have a separate board for rural education?—A board of Rural and Agricultural Education?—Yes, possibly. Rural education is a misnomer. I want agriculture, or strictly defined, selected lessons on agriculture, which is a different thing altogether, to be taught in middle schools and high schools whether those schools are situated in urban or rural areas. My object is not to make a distinction between rural and urban education. My object is to turn the interest of the educated people to the land and the possibilities of nature.

17387. At present the urban bias is rather stronger than the rural bias?—At present there is no rural bias so far as school education is concerned.

17388. *Professor Gangulee:* Do you teach rural economics in your Teachers' College?—No.

17389. That means, in the Training College there is no place for rural economics?—The Training College is a strictly professional college, and all

that we teach the teacher there is the general principles of teaching and the method of handling his own particular subject.

17390. *Mr. Calvert:* I presume you regard the teacher as one of the most important elements in education?—The most important.

17391. Would you say he is more important than the curriculum?—Yes.

17392. You would go so far as to say that the rural bias in the teacher is more important than in the curriculum?—I would.

17393. *Mr. Kamat:* Would you tell us in what period the Madras City has been built up to its present dimensions?—I should like to have notice of that question.

17394. About 100 years or 150 years?—I would like to have notice of that too.

17395. When was the University built up here?—I should like to have notice; it took place a long time ago.

17396. Before these institutions were built up, I suppose there were ancient seats of learning in India?—Yes.

17397. All these ancient seats of learning were in jungles and in the pastoral parts of the country, not in cities?—So it is said.

17398. In the light of that, may I know who brought the Madrasi from his pastoral surroundings to urban surroundings?—Not only education.

17399. Would you agree that it is British education?—He was brought to it in the natural course of events.

17400. In the rural parts of this country, have you got the same amenities as, for instance, a Britisher finds in his village?—No; I think not.

17401. Can an ordinary educated man, educated say up to the matriculation standard, make a decent living nowadays in rural surroundings?—I think it is difficult for him.

17402. But in other countries such educated people can?—They can make a living.

17403. So, it is not a question of racial predilection or instinct, but it is a question of bread and butter?—I do not think it follows. I think there does exist a racial instinct among Indians towards an urban life.

17404. I just pointed out that the racial instinct which existed among all the ancient *pandits* and *moulvis* for rural surroundings has been changed owing to certain circumstances. There is no decent living left in rural areas, and that is what we must create. Do you agree?—I think I should like to be rather more clear. You talked about ancient seats of learning and of the nature knowledge that they have left us. They have left us knowledge of all kinds, but my submission is that in those ancient seats of learning there was no rural outlook.

17405. The point is not the quality of the learning. The point is entirely different; it is about rural and urban outlook. The real point at issue is, when we send back men to rural surroundings, whether there are any occupations for them. Before we create occupations can we really send back our educated people there simply by changing the system of education?—It will be a slow process, but I think if we can show the educated youth that agriculture has possibilities as an avocation, if we can get him to take an interest in nature (it will be a slow process), I see no reason why his outlook should not gradually change.

17406. If a matriculate or high school trained boy could get a decent living, say, Rs. 100 or Rs. 75 a month, with a capital of, say, Rs. 2,000 would you be surprised to hear that 95 per cent. of the educated people would go back to the land?—You say if a matriculate could get an income of Rs. 75 a month?

17407. Yes?—It is a decent living; I think he would be prepared to go to the village.

17408. So, it is not a question of rural outlook; it is a question of bread and butter?—No. The bread and butter question is included; it has its influence. But there is also, I say, apart from that bread and butter question, the question of this natural outlook.

17409. What I wanted to ask you was, unless 5 or 10 acres of land pay an educated man enough to give him a decent living, decent clothes and ordinary food, can you expect him, merely by instinct of rural outlook to go back to the land?—No, you cannot.

(The witness withdrew.)

Mr. J. W. KEITH and Mr. C. E. WOOD, Representatives of Messrs. PARRY & Co., Madras.

Replies to the Questionnaire.

QUESTION 2.—AGRICULTURAL EDUCATION.—Apparently not many of the students who have been trained go back to the land, and it is suggested that a college, where sons of *mirasidars* could be trained in agriculture, would be of great value.

Poultry farming and market gardening, especially in the vicinity of large towns should form a means of livelihood to many if they could be induced to adopt it and can find the necessary capital to start.

QUESTION 10.—FERTILISERS.—(*a*) Our efforts as a firm of fertiliser manufacturers for over 25 years is a sufficient answer to the first question—our general experience being that the application of fertilisers to normal soils is profitable. The average Indian soil is impoverished by centuries of crops and the shortage of farm yard manure indicates that artificial manure is very necessary. We have a very large number of customers who have been using our fertilisers year after year for periods ranging in some cases up to 20 years. It is almost impossible to give a general statement showing the actual profit derived from the use of artificial manures, as ryots keep no proper accounts, but from our long experience we estimate that the profit per acre may range between Rs. 15 and Rs. 150 per acre depending on the locality and crop and on the amount of fertiliser used.

Extended use of natural and artificial fertilisers will come as soon as ryots realise that their use is profitable. In order to popularise the use of fertilisers continued demonstration is necessary. A demonstration plot in every village is desirable, but a start might be made by having three or four plots in every taluk, under the control of the Agricultural Demonstrator. Such demonstration plots should be confined to artificial manures only. Other plots could be used to demonstrate advantages of seed selection or the use of improved methods of cultivation. Continual advertisement is also necessary but this is the business of the fertiliser firms interested, who at present are quite prepared to distribute free a reasonable amount of fertilisers for experimental purposes.

(*b*) Reliance would have to be placed on a system of inspection and analysis with punishment of transgressors, but we submit that this matter is, at present, not of great importance, as, generally speaking, fertilisers are supplied only by firms of good repute. The presence of sand in poonacs and in fish guano and manure is not usually due so much to wilful adulteration as to defective methods of manufacture. Poonacs have been known to contain up to 60 per cent. of sand, but simple inspection is sufficient to show the inferior nature of the product.

All artificial fertilisers should be sold on guaranteed analysis but we would urge the fertiliser industry should not, at the present stage of its growth be too much hampered by inspection which is liable to have its attendant abuses.

(*c*) Much is being done by fertiliser firms at present to popularise the use of artificial fertilisers by the distribution of free samples to *bonâ fide* experimentors and the good results obtained are broadcasted by canvassers and by advertisement amongst potential users.

Every Agricultural Demonstrator should supervise experimental plots, if not in every village at least in every taluk and fertiliser firms are only too willing to co-operate with the Agricultural Department by the supply of reasonable quantities of fertilisers.

After demonstration has proved the usefulness of fertilisers, a system of distribution must be considered and the ideal system is a series of local depôts fed from a central factory or distributing centre. Through the co-operation of the Agricultural Department during the past few years we have demonstrated that this system is good and a very much larger turnover would have been obtained had ample supplies of fish guano been available. Ryots are very conservative and once having obtained good results from one particular manure are very unwilling to use any other. For example in Guntur, Repalli, Tenali and surrounding districts a very big demand for fish guano was created through the work of the Agricultural Department and ourselves, over 300 tons being sold through a chain of depôts. Unfortunately the fish guano season was a failure on the Malabar Coast for two years in succession but sales of other fertilisers were practically *nil*. There is, however, evidence of an increasing demand, from this district, for superphosphate and bonemeal—supplies of which are always available.

A system of depôts is necessary for the reason that the ryot will not buy ahead but waits till he sees signs of a good crop before ordering manures and this allows no time for supply from a central factory which may be 300 miles away. Individual orders are placed for only a few hundredweights at a time.

Because of overhead charges distribution from depôts is of necessity more expensive than from one central depôt but the extra cost is justified by the convenience. To popularise the use of fertilisers and improved methods of cultivation, a suggestion has been made that when remission of land tax is necessary on account of failure of crops, a larger remission might be made to cultivators who can show they have made some effort to improve their cultivation either by extended use of manures or by seed selection or by use of improved implements. This matter would need great care.

More attention might be paid to local agricultural shows—a spirit of healthy competition in the growing of paddy, *ragi*, chillies and tobacco, etc., would be very stimulating. Such shows would be useful as centres for disseminating knowledge of genuine interest to agriculturists, and, to give the best results, should be very local in character. Certificates of merit issued by the Agricultural Department would be of great value in raising the standard of cultivation. Fertiliser firms would be prepared to co-operate with the department in making such shows a success.

Popularising the use of manures is of course closely allied to the question of payment. It is impossible for any firm to give credit to thousands of small customers and this is where co-operative societies should be of great assistance. For cash payment we allow such societies special discounts and if these societies would grant short-term loans to members on the security of crops to enable them to take fertilisers, the actual cost of the fertiliser to the member would be very little more on credit terms than it would be for cash—in so many cases an impossibility. Of the hundreds of co-operative societies in South India there do not appear to be more than half a dozen who do anything to help their members to purchase manures. Very close co-operation between the Agricultural Department and the co-operative societies seems essential and from such co-operation the greatest good seems likely to accrue.

With a guarantee of payment we should even be prepared to distribute on credit through co-operative societies and this would very largely help to solve the very difficult question of distribution.

(*d*) In Guntur district in 1925 we sold 63 tons and in 1926 to date we have sold 268 tons.

In Nellore district we have a customer who in 1922, bought one ton as an experiment. In 1926 he has bought 33¼ tons.

The sales in this district in 1925 were 27 tons and up-to-date in 1926 are 70 tons.

Mr. J. W. Keith and Mr. C. E. Wood.

In Chingleput and North Arcot, South Arcot, Tinnevelly and the Nilgiris increased sales are also to be noted.

(e) Much investigation has been done by the Agricultural Department in connection with manuring and experiments in conjunction with private agencies are in progress at various places in the Presidency. The experiments we are conducting or behalf of the Potash Supply Company of London have demonstrated to the full the importance of potash manuring in tobacco.

Much of the work done by the Agricultural Department seems to be hidden away in official bulletins which are accessible only to a very few and the possibility of more widely disseminating the knowledge gained is one that deserves great consideration. Distribution in the vernacular is necessary and it should be a point of policy that every ryot able to read should be in possession of the results of experiments.

We find one of our greatest difficulties is to spread the results of successful demonstrations. One district is sceptical regarding the results obtained in another with the result that demonstrations are often multiplied where a little faith is really all that is necessary. This means slow progress. It seems possible that work by the Agricultural Department could remedy this.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—We do not consider it advisable that Government should take any steps to establish industries as suggested in this question.

Industry and agriculture are, generally speaking, two entirely separate ventures and should not be confused. In any case we submit that it is not the province of Government to commit itself to industrial undertakings except purely on an experimental scale.

Agricultural Departments can disseminate useful information about improved types of agricultural implements, crushing machinery, etc., and might demonstrate their use and encourage purchase through co-operative societies, but should abstain from taking any active part in the establishment of industrial enterprises, a matter for which Government is not, ordinarily, properly equipped.

Oral Evidence.

17410. *The Chairman:* Mr. Keith, you are the representative of Messrs. Parry & Co., manufacturers of fertilisers, and you are accompanied before the Commission to-day by Mr. Wood. You, Mr. Wood, are the senior partner?—Yes.

17411. Which of you, gentlemen, will speak to the note of evidence?—Mr. Keith.

17412. And we shall assume, Mr. Wood, that unless you contradict Mr. Keith, you agree with him?—Yes.

17413. You have put in a note which the Commission has read with great interest; it really explains itself, but there are just one or two questions which I should like to ask you. You point out on page 761 that in order to overcome the natural prejudice and conservatism of the ryot, it is necessary that a great deal of demonstration and propaganda should be undertaken. Have you yourselves financed any such propaganda?—We have run a considerable number of experiments in the Presidency.

17414. Have you any views as to the relative merits of propaganda and demonstration on your own plots and propaganda and demonstration on the ryot's own holding?—I think I should prefer the ryot's own holding, if it can be arranged.

17415. He always thinks there is some magic at work, if the Agricultural Department controls the land?—That is one thing.

17416. What are the others?—He very often has the impression that the demonstration is conducted on a specially selected plot; he may think it is much better land than his.

17417. That more money is spent than he can afford and that better land is being used?—Yes.

17418. On the question of adulteration of fertilisers, have you in your experience had any cause to suspect the distributors of adulterating fertilisers?—No, because at present we have practically no distributors; we have our own agents.

17419. So that they have nothing to gain by adulteration?—No.

17420. Unless it would enable them by the increase in bulk to steal a certain amount of substance; but that does not arise in your experience?—A large amount of pilfering goes on, but that is quite different from adulteration.

17421. The bulk is not made up by foreign substances, but it is simply a question of petty theft?—That is so, so far as I can understand from my complaining constituents.

17422. The theft takes place on the railways?—Partly on the railways and partly between the station and the city.

17423. That shows a fairly active demand for fertilisers amongst a certain section of the community?—It is quite surprising.

I suppose you take it as a hopeful omen, do you not?

17424. Have the railways been accommodating to you in the way of providing godowns or space for godowns?—No.

17425. Did you have to ask for that at all? How about your depôts; are they situated in large railway centres?—No, because the difficulty is that we want these depôts outside municipal limits, for purposes of taxation.

17426. Do you find there are municipal dues to pay?—There are license fees to pay.

17427. And you find that the cartage to distant depôts is less than the fees?—That is very difficult to say.

17428. On page 762 you point out that a few co-operative societies appear to take an interest in the matter. Have you ever approached, or in your knowledge has any one else ever approached, any representative body able-

to speak for all the co-operative societies, with the view of pushing schemes of this sort?—We have addressed the Deputy Registrar of the North Arcot district, but we have not received a reply.

17429. Did you point out that if fertilisers could be distributed on a co-operative basis, that might provide the security upon which you yourself could give credit?—Quite so; we are considering that question; of course, as we have pointed out that with a guarantee of payment from some body, Government or the co-operative society, we should be prepared to distribute on credit through co-operative societies.

17430. Naturally, you must have reasonable security for your loan?—Yes.

17431. Are you the only firm distributing artificial manures in those parts of the Presidency in which you trade?—No, there are two other large European firms.

17432. Do you know the extent of their sales?—I have no figures.

17433. Can you say, from your experience, that there is a steadily growing demand for artificial fertilisers?—Our figures point that way.

17434. Are you asked by cultivators for advice on the technical aspect of fertilisers?—Yes.

17435. What is your advice as to the need or the reverse for a certain proportion of organic manures with the artificial fertilisers?—We continue to recommend that as much organic manure as possible should be used, and that, in our opinion, the best results are got from a combination of organic and artificial fertilisers.

17436. Do you manufacture all your manures or any of them?—We have large bone presses, and we are at present manufacturing superphosphates; we crush ground-nut poonacs and bone.

17437. Do you handle sulphate of ammonia?—Yes, we do.

17438. Have you difficulty in getting all the bones you want?—Yes, the supplies are running short.

17439. Have you any views about the desirability of prohibiting the export of bones from this Presidency?—I think the question is largely an economic one.

17440. Is it not rather more than economic? There is a very definite shortage of certain substances in the soil, and if you are exporting those substances, how can you make the deficiency good? That is the problem?—We are simply exporting because there is no demand for them in the country; we would much prefer to sell in the country.

17441. You yourselves are exporting?—With regard to the suggestion that export should be prohibited, our position has always been that it would be a correct policy to follow as soon as it was found that the supplies were being utilised in the country, but our experience up to date has been that unless we export a certain quantity every year, the turnover is not sufficiently large to make bone crushing a commercial success.

17442. You, gentlemen, of course represent a limited liability company, I take it, and you very rightly look to the interests of the shareholders?—We have got the cost per ton; it makes a difference to the cost of the turnover whether we do 100 tons or 1,000 tons; unless we can get a sale for 1,000 tons to work economically means that we have to charge very high prices for the small quantity sold in the country.

17443 I see the point. I was going to say that you very naturally and rightly take the commercial view, and that is what you are here for?—Yes.

17444. I was wondering whether you would suggest that the increased cost of production as a result of lower outturn would counteract the natural tendency for the prices to drop, if the export demand were cut off?—The cost of crushing by unit crush would not come down unless the crushing were done in the country.

17445. Meantime, your overhead charges are spread over the whole of your product whether sold in the country or exported?—Yes

17446 If there were no export of bones, you would have presumably a lower outturn?—Yes, a lower outturn.

17447. If you continued in business, the whole of that business would be confined to the Presidency?—Yes.

17448. Whether you could do so at a profit or not I do not know; you presumably would have to lower your charge to the public in this country in order to encourage the extension of your business in the Presidency?—Yes.

17449. And the question is which of these two factors would be the more powerful?—With the present off-take of Madras from factories, I should say that it would not pay a fertiliser concern to continue unless it could export.

17450. That is definitely your opinion?—I think so. The price of the product to the consumer would of course go down so far as bones are concerned, but that is a small proportion of the turnover of a factory.

17451. What is your technical method; do you digest these bones?—Some of them, when steamed bonemeal is required, but the greater part of them is merely crushed; they are very dry in this country.

17452. Have you carried out experiments youself, to satisfy yourself that you in fact break down the bones and that they are available for the plant in the shape of food?—That is undoubtedly so; we have carried out experiments for many years.

17453. You are familiar with the practice in colder countries, and you know that if any grease is left in the bone, it does not dissolve but lies a long time in the soil; that does not exist here?—Not to such an extent; some users prefer that some of their fertiliser should become available at a later date gradually; they want it spread over a period.

17454. *Professor Gangulee :* What is the smallest bag that you sell?—We sell anything from 75 lbs. to 300 lbs.; the customary packing is 1 or 2 cwt.

17455. Is there any collective buying by a group of ryots?—We have one or two villages that do have the system of collective buying.

17456. Not through co-operative societies?—They come direct.

17457. Do you know enough about the details to tell the Commission who arranges that?—In this particular village that I am thinking about, it is simply arranged by one or two headmen of the village.

17458. And those men have been in touch with the Agricultural Department?—Yes, they have been in touch for many many years.

I suppose you are trying to extend the lesson.

17459. With regard to the demand in India, is the demand from the Indians or from the European planters?—We have large demands from both.

17460. Which is greater? Is the European demand the greater?—I should say so at present.

17461. You manufacture sulphuric acid yourself?—Yes.

17462. You get your sulphur from Sicily?—No. We get American sulphur.

17463. *Mr. Calvert:* You suggest that the profit per acre may range from Rs. 15 to Rs. 150 per acre. Is that the net profit?—Yes, net profit after cost of the fertiliser has been deducted.

17464. And the additional cost of cultivation and harvesting involved?—No.

17465. You are suggesting that co-operative societies are not taking much interest. If the profits are anything like Rs. 30 per acre net, it is difficult to understand why they do not come forward?—We know ryots do get profit. We are surprised at the slowness of the advance.

17466. That applies to the Madras Presidency?—Yes.

17467. Is the consumption limited to places near Madras?—It pays them to carry this stuff to long distances as well, by rail. We have a very large demand in Guntur district which is about 300 miles from the factory.

17468. You are opposed to Government undertaking pioneer industries?—(*Mr. Wood*) Yes. How long is the country to wait for private enterprise to undertake these experiments?

17469. On page 763, in reply to question 17 you say "it is not the province of Government to commit itself to industrial undertakings except purely on an experimental scale." That is I think the commercial opinion about all matters relating to commerce and industry, that the Government should confine itself to experiments and leave it to commercial enterprise to do the rest?—The experiments may be on some considerable scale so long as they do not interfere with private enterprise. I have no general objection to that. You cannot interfere with private enterprise; it does exist. There are three fertiliser factories which have been in existence for 10 or 15 years, and they have had a very difficult time indeed and spend a great deal of money on propaganda work, in spreading knowledge of fertilisers, etc. And if Government were to come in now as competitors, it would be a very serious thing indeed for them, as it is in the other Presidencies.

17470. You make two definite proposals. One is to make card-board by the utilisation of wheat straw. There is no private enterprise to interfere with it?—I should say there is private enterprise.

17471. There is no manufacture in this country of such straw card-boards?—Yes. I think there was an industry established in Madras very long ago and it is closing down. I do not think it is correct to say that it should be done or ought to be done, but if it obtains orders from Government for all their requirements, it could possibly exist.

17472. "The utilisation of cotton seed to extract felt, fuel, fodder and oil." What is your view about cotton seed oil?—I have no objection to experiments.

17473. Would you permit the experiments to go so far as to encourage private industry?—On a small scale, certainly. There is the instance of a soap factory on the West Coast which has been started by Government and quite successfully run by Government, and Government have now offered it to the public, but no private enterprise has come forward to run it because there is nobody who has come to the conclusion that it could be run as a commercial concern with success. It is merely as an experiment; if Government were to take it up on a very large scale now, it would be incorrect, I think, because commercial opinion is that it could not be a paying proposition. Government undoubtedly could run a considerable number of ventures; but there will be a great deal of harm to trade.

17474. My point is this: Is not the country losing while it is waiting for private enterprise to take up these industries?—Private industries will come if there is chance of reasonable profit accruing.

17475. The turpentine factory in the Punjab has been started by the Government?—Yes, but it is closing.

17476. It is still going on? It is now on a co-partnership basis?—Is that so?

17477. I presume it is part of the scheme for utilisation of forest product, is it not?—Yes, they are using forest product. And commercial enterprise and things of that sort are rather handicapped because they do not know what Government is to do next.

17478. Practically, in this ill-organised country, there is very little manufacturing enterprise?—There has been a great deal of manufacturing enterprise, but I suppose very unsuccessful in a great many instances.

17479. They are manufacturing?—Yes. The Presidency was strewn with sugar factories which have closed down. That is one instance.

17480. *Sir Ganga Ram:* You are a manufacturing firm as well as an importing and exporting firm?—Yes.

17481. Are the other firms also the same? Have you any connection with Shaw Wallace?—None.

17482. What manures do you deal in?—We produce manures as any one else does.

17483. Have you got a branch here?—Yes.

17484. You state you make superphosphates. How can you make it without sulphuric acid?—We make it from imported sulphur.

17485. You stock the bones for making bonemeal?—Yes, some of them.

17486. Do you get any by-product?—The only thing is glue. The Madras Government make glue and we do not.

17487. Have you any branch in the Punjab?—No.

17488. You send your representative to the farms to show the effect of these things and point out what a profitable thing it is to grow with manure?—Also without manure, in big flower pots.

17489. That is what is done all over the world?—We have started experiments like that here.

17490. Do you send them to farms outside?—Are there no agricultural farms?—No. We send representatives to all the exhibitions, agricultural and co-operative society exhibitions.

17491. You do not deal in agricultural implements?—We do; we have an agency in Madras.

17492. Agency?—I think an agency for American machinery.

17493. Supposing I copy a piece of plant? Would you claim any royalty?—We should.

17494. You or somebody represented to me that you were very much handicapped by the high rates of railway freight. I do not remember which firm it was, but are the railway freights so very high as to retard your spreading these things?—It is a very big factor, I should think.

17495. Is it a big factor?—Yes, it is.

17496. Then there is no doubt that the manure is mixed with sand in large quantities. Where is it done, at the destination or at the beginning?—I suppose at the destination, to save the railway freight.

I do not know if you have experience, but I have experience and I am telling you. It is 60 per cent. or so.

17497. *Sir Thomas Middleton:* Is your main business with manures?—Yes, I should say, at present.

17498. Is the demand mainly for nitrogen or phosphates?—That is a mathematical calculation; there are mixtures containing both. The people take compound manures.

17499. Can you say whether different tracts of the Presidency are likely to want different mixtures? I think you are meeting special demands?—That is really an important question to be thought out and worked. We supply all demands for special fertiliser.

17500. You are finding a demand for phosphates in the tobacco-growing districts?—Yes.

17501. Is there any demand coming from the cotton growing districts?—At present the demand is slight.

17502. In what form do the tobacco growers take potash?—What is known as high grade sulphate.

17503. 50 per cent. quality?—Yes.

17504. You refer to the conservatism of cultivators who have been accustomed to fish guano in taking to other fertilisers?—Yes.

17505. You want fish guano for a certain purpose. What about bonemeal? Does it give the same result?—It is good, otherwise we should not have recommended it.

17506. What percentage of nitrogen does fish guano contain?—I presume it is 8 per cent.

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17507. A much lower percentage than the fish guano used in Britain?—Yes, much lower.

17508. *Dr. Hyder:* I should like to know whether as the manufacturer of bonemeal you are for the prohibition of its export as a manure or for taxing its export?—I have answered that question before. At present, we think that the export should not be prohibited, but that as soon as there is an indication that as much of the bonemeal as is available in the country will be consumed, export should be stopped.

17509. *Dewan Bahadur Raghavayya :* With regard to this analysis which you conduct for the benefit of your constituents, are there any conditions under which it is conducted, that is to say, should the constituent or the ryot who seeks your advice purchase a certain quantity of the fertiliser before the analysis is made, or is it made in the case of anybody who seeks your advice?—We make no stipulation.

17510. *Sir Ganga Ram:* You are sending your manures to the Punjab?—It is rather far away.

(The witnesses withdrew.)

The Commission then adjourned till 9-30 a.m. on Tuesday, the 30th November, 1926, at Calcutta.

APPENDIX

Export Duties on Bones and Oil-Cakes.

As already explained in evidence, it is through exporting bones that fertiliser manufacturers in India are enabled to keep down their prices of all fertilisers sold in India.

The imposition of an export duty on raw bones would not, except perhaps temporarily, have the effect of lowering their price to the agriculturist.

The price of raw bones must in due course become adjusted to world prices for similar fertilisers, that is, purchasers in India will, in the ordinary course of events, be made to pay for them a price bearing direct relationship to the lowest price at which other fertilisers, having similar chemical composition, could be imported or otherwise obtained.

It must not be forgotten that fertilisers are already being imported in increasing quantities, will be still more needed in the future and will continue to set the price for indigenous fertilisers.

That there cannot be two prices for the same article in a market is as true when applied to the units of nitrogen and phosphoric acid in a fertiliser as it is to any other commodity, and in my opinion an export duty on raw bones or export prohibition would not materially affect the ultimate price situation.

Further, restrictions upon the export of bones, if in the first instance resulting in lower prices, would adversely affect collections.

A present feature about bones' export is that higher prices are being obtained than are warranted by their nitrogen and phosphoric acid contents only. This is because they are required for their glue contents also.

The position therefore is that it is to the advantage of India to take this high price and to purchase instead foreign fertilisers costing less per unit of nitrogen and phosphoric acid.

Restriction on the export poonac—another indigenous fertiliser—might even cause very grave hardship to those engaged in oil extraction, and this would re-act adversely upon the cultivator of oil-seeds.

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———, probably does not work more than 8 months a year (*Sutherland*) (402), (*R. Mudaliar*) (706).
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AITCHISON, D. A. D., M.R.C.V.S., M.P.S., I.V.S., Veterinary Adviser to the Government of Madras (382-400).

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Bulls, Kangayan (*Subbarayan*) 14,972-6, 15,213-5.
——, working bulls (*Subbarayan*) 14,978-9.
——, should be provided at weekly markets (*Paul*) (227).
Castration (*S. Mudaliar*) (428).
————, a good deal of used to be done by touring veterinary assistants (*Leach*) (590).
Cattle, useless, every village overstocked with (*Leach*) (589).
Cattle-breeding (*Subbarayan*) (541-2).
————, herd of the Pattagar of Palayakottai, very remunerative, discouraging influence of the Estates Land Act (*Subbarayan*) 14,899-904.
————, Kangayam and Ayrshire bulls, Sindhi cattle, dairying (*Subbarayan*) 15,138-54.
————, might be placed under Veterinary Department (*Aitchison*) 13,155-62, 13,273-5, 13,317-8.
————, Cattle Improvement Officer should be appointed (*Aitchison*) 13,188-90.
————, improvement of milch cow and draught ox 13,191-2 (*Kollengode*) 10,987-96.
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————, panchayats might control (*Leach*) (589), 15,688-92.
————, should be gradually abolished (*Leach*) (589-90).
————, common pastures are inadequate (*S. Mudaliar*) (428). 13,863-5.
Cow, care of (*Subbarayan*) 14,976-7.
——, dry cows put out to graze (*Aitchison*) 13,297-8.
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————, doubtful whether cow can take place of milch buffalo (*R. Mudaliar*) 16,810.
————, could be improved at Cantamanayakanur (*S. Mudaliar*) (428).
————, loans for should be granted by Government (*S. Mudaliar*) (428).
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Draught animals, ryot does not appreciate importance of improvement of (*Leach*) 15,600.
Fodder, crops (*S. Mudaliar*) 13,866-7.
——, times of shortage, in Madura (*S. Mudaliar*) (428); in Salem (*Subbarayan*) (542), (*R. Mudaliar*) (705).
——, scarcity, system to deal with, necessary (*Subbarayan*) (541).
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———, fodder and green manure crops, concessions as to water charges (*MacMichael*) 11,874, 12,040-3.
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————————, goats (*Tireman*) 11,126-7.
————————, silage (*Tireman*) 11,182-3.
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Plough, improved, cannot be used because of smallness of draught animals (*Subbarayan*) 14,967-71.
Silo should be adopted (*Paul*) (227).
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ANSTEAD, RUDOLPH, M.A., Director of Agriculture, Madras (32-150).

ADMINISTRATION:

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Director and Deputy Directors of Agriculture, duties of 9405-9.
————————————————, administrative duties prevent touring 10,593-602.
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———, implements limited by strength of (48).
———, number of 10,308-11.
———, breeds and breeding, Brahmini bulls deteriorating (50).
————————————, bulls, premium, not enough 9702-8, 10,180-4.
————————————, castration, bloodless, should be developed (50), but compulsion inadvisable 10,185-7.

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——, cows, ryot should be taught to take greater care of (51).
——, dual purpose 9718-22.
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——, Kangayam 10,310-20.
——, not profitable (52).
——, Ongoles, 9709-13, 10,311-20.
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——, Viceroy and Governors could stimulate interest 9700-1.
——, Feeding, fodder, insufficiency of, owing to competition of commercial crops and water-shortage (51 and 52).
——, forests should be used for fodder famine reserves 9851-61.
——, grazing lands should be free from taxation (52), 9792-9804.
————, are becoming cultivated 10,078-81.
————, panchayats should limit stock on grazing land and encourage silage making (50).
————, common, should be controlled to prevent excessive grazing and promiscuous breeding (51).
——, enclosures would improve cattle 9713, 9801-4.
——, prickly pear should be used as famine fodder 9862-3.
——, salt should be given 10,416-22.
——, silage, importance of 9725-56.
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——, values of foodstuffs should be studied (51), in collaboration with Bangalore 9780-3.
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——, co-operative societies should run dairies (49), and purchase bulls (50).
——, milkmen's societies should be formed (51).
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Goats require control 9688-92, 10,149.
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Demonstration (39), 10,062.
Dairying should be undertaken (49).
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Implements, distribution of, should be undertaken (49).
Irrigation, minor schemes 10,489-91.
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——————, demonstrators have not time to assist 10,615-6.
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———, ginning and pressing factories, control of (47).
———, control of weighing ineffective (47).
———, measures for improvement of crops partly effective (47).
———, protective measures ineffective (45-47).
———, South Indian, poor quality 10,431-4.
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Madras Agricultural Pests and Diseases Act, 1919 (45-47), should be more rigorous 9632-36, 10,073, 10,188.
Mahali disease of Areca palms prevented by Bordeaux mixture (40).
New crops, little scope for (44).
Onions 10,535-9.
Potatoes 10,121-2, 10,539-43.
Recognisable character of improved strains desirable (44).
Rice seed 10,092-7, 10,347-50.
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Varieties, approved, cultivation of, by ryots not insisted on 10,709-10.
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Water requirements of crops 9566-73.
Wild animals, damage by, negligible (45).

CULTIVATION:

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Improvement, extent of, satisfactory 10,200-10, 10,304-5.
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Landlords do not co-operate 10,055-8, 10,608-14.
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Increased output of a new method must be 15 to 20 per cent. to attract cultivators 9458-60.
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Nature study should be taught in schools (35-36), 9377-87, 10,052-4, 10,400-1.
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Schools, primary and high, should not teach agriculture (35-6).
Science, rudiments of, should be taught in schools 9389.
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Activated sludge plant necessary 9587-92.
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Cowdung as fuel, evil effects exaggerated, cannot be stopped (43).
———, the best manure 10,624-9.
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———, should be prohibited 9593-9601, 10,023-5, 10,449.
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———, railway freights an item 10,069-72.
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Post office savings bank should encourage thrift 9504-8.
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Fodder famine reserves, should be used for 9851-61, 10,408-11.
Madras City, neighbouring forests should be reserved for grazing dry cows (51).
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IRRIGATION:

Agricultural and Irrigation Departments, no touch between 9538-48.
———, disagree as to water requirements of sugarcane 9566-73.
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Schemes 9537.
Value of land affected by 10,553-7.
Volumetric basis of charge ideal but difficult 9674-6.
Water requirements of crops 10,546-51.
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———, co-operative societies should sell standard qualities (53).
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Education, the means of improvement of (56).
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———, special officer should be appointed 9870-2.
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———, decortication of 9897-9904.
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Board of Agriculture, very useful 9997-9.
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———, to be financed by an export cess 10,000-2, 10,457-63.
———, to suggest and correlate Provincial research, but agriculture would remain provincialised 9313-39, 10,646-10.

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——————, varieties unsuitable for Southern India 10,339-46.
——————, Agricultural College (62-3).
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Provincial, must be largely (32).
Publicity officer should be attached to Central Research Committee (33).
Pusa, should concern itself mainly with fundamental research, leaving local application to Provinces (32).
——, is very useful within limits, difficulty as to travelling expenses, enjoys very high prestige but cannot completely train research workers 9297-9303.
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——————, carried out by Revenue Department 10,450-3.
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Agriculture, does not pay (*S. Mudaliar*) (429), (*R. Mudaliar*) (706), but rent-collecting pays (*R. Mudaliar*) 16,816-8.
————, yield (*S. Mudaliar*) 13,845-50, 13,948-54, has decreased (*S. Mudaliar*) 13,702-14, but value of land has increased (*S. Mudaliar*) 13,754-6.
————, not the most profitable means of using capital (*Anstead*) (58), 9950-8.
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Improvement of land, hindrances to, Estates Land Act, fragmentation of holdings, lack of credit facilities, lack of education (*Subbarayan*) (545).
————, banks will not give loans merely on land mortgage (*Subbarayan*) 14,922-6.
————, Estates Land Act, 1908 (*Subbarayan*) 14,903-4, 14,983-8, 15,081-4, provisions of (*Subbarayan*) 15,100-11, permits increase of rent in respect of sinking of wells (*Subbarayan*) 15,273-7.
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————, factors discouraging are personal (*Leach*) (591-2).
————, want of funds and apprehension of taxation of improvements (*S. Mudaliar*) (429), (*Anstead*) (59).
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Landowners not interested in cultivation and improvement of land (*R. Mudaliar*) (707).
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Price of and profit from land (*Leach*) 15,702-8, (*Subbarayan*) 15,206-11.
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Sub-tenures, multiplicity of, handicap to improvement (*Kollengode*) (190), 10,972-3, 11,018-22.
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CHAMPION, HERBERT, M.A., Principal, Teachers College, Saidapet, Madras.

ADMINISTRATION:

Education: Advisory Board of Rural and Agricultural Education should be appointed (751).
Records of experiments 17,311-23.

EDUCATION:

Adult, by secondary school teachers on a co-operative basis 17,310.
Advisory Board of Rural and Agricultural Education should be appointed (751).
Agricultural schools should be opened after scheme for teaching agriculture in general schools has been in operation for two years (749-50).
Agriculture, science, practice and business, should be taught in schools (749), 17,338-50, 17,378-82.
Bias, agricultural, in high schools, should consist of chemistry, botany, elementary physics and manual training (750).
Carpentry, teaching of in schools 17,328-37.
Female 17,307-9.
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Records of experiments 17,311-23.
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Sympathy necessary from authorities and public (751).
Teachers, from rural areas not preferable 17,303-6.
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HOOD, H. M., I.C.S., Registrar of Co-operative Societies, Madras, and **MUDALIYAR, M.R.RY. RAO SAHIB K. DEIVASIKHAMANI.**

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Causes of borrowing: marriage, illness, improvidence, litigation, vicissitudes of seasons and ignorance (606).
————————————, not much spending on ceremonies (625).
Extent of indebtedness must be investigated 15,891-906.
————————————————————, re - settlement reports 16,015-7, 16,149, 16,392-3.
Interest, of moneylenders, not necessarily high (606).
————, sometimes exorbitant (625).
Investment, no market for, in rural India (606).
——————, in co-operative societies 15,819-25, 16,102-3.

AGRICULTURAL INDUSTRIES:

Agriculture as an industry subsidiary to weaving (607).
Blanket-weaving in the Ceded Districts (607).
Carting (607).
Coolie work (607).
Unemployed period of the year varies (607).

AGRICULTURAL LABOUR:

Machinery, labour-saving, will cause unemployment (617).
————————————, introduction of, undesirable (629).
————————————, distinguished from labour - improving machinery 16,137-48.

CO-OPERATION:

Agricultural Department helping Co-operative Department 16,308-17, 16,357-71, 16,400-5, 16,423-4.
Banks, in all Districts except Nilgiris and Ramnad 16,210-1.
————, of mixed type, balance sheets 16,425-45.

HOOD, H. M., I.C.S., and MUDALIYAR, D.—*contd.*

Co-operation—*contd.*

Building societies in urban areas 16,227-32.
Business capacity required in management of societies (607).
Cattlebreeding societies, none (618, 630).
Cattle insurance societies (618, 630).
Clearance of silt societies (616).
——————, cannot take action against unwilling persons (629).
Common Good Fund, contributions to by societies 16,408-9.
Conference representing all Provinces would be helpful 16,484-9.
Consolidation of holdings, societies, no demand for (616), (629), 15,944-50, 16,084-5, 16,134-7.
Credit societies, overdues are mounting (608-9), 15,891-906, 16,298-300.
Crop loan societies (620-3), Lalgudi Crop Society (620), 16,098-101.
——————, Orthanad Crop Loan Union 16,066-8, 16,121-30.
——————, payment of kist 16,347-9.
Demonstration and propaganda, Agricultural Department might make fuller use of co-operative organisation for 15,780-4, 16,308-17.
Education, elementary, should include instruction in principles and methods of co-operation (608), 15,862-72, 16,161-6.
Expansion, more rapid, demanded by financing banks 16,114-21.
Extent to which the people are in touch with co-operative movement 16,080-3.
Fences, etc. (for) construction of, societies (616).
Food and necessaries, loans for 16,295-7.
Funds of Central and Provincial Banks, lying idle, 16,086-97, 16,109-13, 16,211-3.
——————, only available for short-term loans 16,331-51.
Godowns built with money lent by Government 16,131-3
Imperial Bank, cash credit of 60 lakhs 15,951-2, 16,321-4.
Interest, rate of, co-operative societies 9 per cent., sowkar 12 per cent. 15,830-2, 16,301-3, 16,318-20.
——————, borrowing 16,340-6.
——————, competition with sowkar 16,410-5.
Joint-farming societies (617-8, 629).
Labour societies, activities of (618 to 620), (630).
Labour societies, opposition from vested interests and mismanagement, (618, 630).
Land mortgage banks, issuing negotiable debentures (609), 15,785-815, 15,988-93, 16,013-4, 16,104-8, 16,149-60.
——————, period of loan, rate of interest 16,372-91, 16,416-8.
——————, management and supervision of, rate of interest 16,447-83.
Legislation to compel minority to co-operate in joint schemes inadvisable (624).
Liquidation of old debts 16,350-3, 16,419-22.
Long-term funds necessary (607, 609).
——————, relative importance of as compared with short-term loans 16,024-48.
——————, liquidation of old debts 16,350-3
Losses and defalcations 16,231-51, 16,253-70.
Machinery, societies for co-operative use of (616-7, 629).
Management, personnel 16,058-62.
Manufacture and sale societies, ample room for development (614-5)
Marketing, barely in its initial stages (624).
Membership, character of 16,193-6.
——————, depressed classes 16,278-91.
——————, percentage of population 16,336-9.
——————, figures (672).
Non-credit societies, require investigation and experiment, managerial ability and capital (607-8, 626).
——————, progress not sufficient (626-7), 16,063-5.

HOOD, H. M., I.C.S., and MUDALIYAR, D.—*contd.*

CO-OPERATION—*contd.*

Objects of societies in the main not yet achieved (624).
Organisation of co-operative movement 15,963-8, 16,017-23, 16,183-9
Organisation of finance 15,973-96.
Procedure in applying for loan 16,049.
———————————, delay 16,050-3, 16,057, 16,190-2, 16,304-7.
———————————, urgent applications 16,406-7.
Progress satisfactory (626).
———, varying 16,271-7.
Purchase and Sale Societies: for agricultural implements, manure, seed, cattle food, etc., difficult to obtain managerial ability (609-10).
———————————, extent of, figures (610), (628), 15,916-31.
———————————, Shiyali Agricultural and Industrial Society 16,069-79.
———————————, for domestic requirements in villages, neither desirable nor economically possible (609).
———————————, have failed (628), 15,907-15, 16,226.
———————————, for sale of produce or stock (611).
———————————, difficulties of (612).
———————————, Orathanad North, in (613).
———————————, formation of sale societies more difficult than purchase societies (628-9), 15,932-43.
———————————, godown societies 16,214-7.
———————————, societies financing sales, none 16,218-25.
Re-lending by members 15,841-2.
Repayment, elasticity in regard to 15,833-9.
———, danger of facile credit 15,840, 16,165-72.
Security for loans 16,104-5.
Short-term loans, should be fostered for cultivation charges, payment of rent and kists, holding up crops for favourable market (607).
———————, degree of success with regard to problem of 16,024-48.
Size of loans 16,354-6.
Staff, qualifications of 16,173-82.
——, number of 16,202-5.
Supervision (626), 15,826-9, 15,843-61.
———, Government supervision proportionately decreasing 15,873-80, 15,953-9.
———, audit 15,969-72, 15,996-16,012, 16,253-70.
———, strengthening of audit staff 16,292-4.
Taccavi, not necessary where funds can be supplied by co-operative societies (606), (625).
———, might be distributed through co-operative societies in selected districts (625), 16,054-6.
———, should not be confined to co-operative agencies 15,815-8.
———, corrupt practices of subordinate officials 15,960-2, 16,301.
Thrift, encouragement of 16,197-201.
Well-sinking societies (616).
Workers, honorary 15,881-90, 16,202-9.

DEMONSTRATION AND PROPAGANDA:

Co-operative societies, should be done through (605).
———————, fuller use should be made of 15,780-4.
Financial aspects of improved methods should be stressed (605).

EDUCATION:

Elementary, should include instruction in principles and methods of co-operation (608), 15,862-72, 16,161-6.

FINANCE:

Co-operative credit societies should exist in every village for providing short-term loans (605 and 625).
Crop loan system should be developed (605-6).

HOOD, H. M., and MUDALIYAR, D.—*contd.*

FINANCE—*contd.*

Imperial Bank, cash credit of 60 lakhs 15,951-2.
Interest rates of moneylenders not necessarily high (606).
———, sometimes exorbitant (625).
Investment, no market for, in rural India (606).
———, in co-operative societies 15,919-25, 16,102-3.
Land mortgage banks to supply long term credit (605-6), 15,785-815.
Long term credit, should be supplied through land mortgage banks (606).
———, issue of debentures by central banks (625).
Taccavi (*see under* CO-OPERATION).

HOLDINGS:

Consolidation of holdings, co-operative societies for, no demand for (616), (629), 15,944-50, 16,084-5, 16,134-7.
———, propaganda 16,325-9.
———, survey 16,398-9.

HUTCHINSON, Major-General F. H. G., C.I.E., I.M.S., Surgeon General with the Government of Madras.

EDUCATION:

Medical, of the people, necessary (735), through subsidised medical practitioners.
———, inability of school teachers to impart 17,147-56.
———, in Madras Medical College 17,278-9.

FERTILISERS:

Night soil 17,143-6.

WELFARE OF RURAL POPULATION.

Education, medical, of the people necessary (735), through medical practitioners and schools 17,147-56.
———, model villages 17,194-7.
———, in Madras Medical College 17,278-9.
Hospitals, need for greater accommodation (747).
Indian Research Fund Association 17,198-209.
Medical practitioners, extent of subsidy of 17,230-5, 17,239-42.
Nurses, insufficient number of 17,243-6.
Nutrition: Bhutias, diet and work of (732-3), 17,252-3, 17,258-62.
———, co-ordination of Col. McCarrison's work at Coonoor, Agricultural Institute at Coimbatore and Animal Nutrition Enquiry at Bangalore 17,111-37.
———, diets: of agricultural workers on East Coast where beriberi is common (732).
———, a starvation diet 17,263-7, 17,273.
———, of hill tribes of Bengal (732-3), 17,252-3.
———, of Indian troops (723), 17,252-3, 17,280.
———, education, dietary 17,182-5.
———, export of food grains 17,138-40.
———, famine followed by disease (734).
———, ignorance the cause of malnutrition rather than poverty (734).
———, McCarrison, Col., work of, of vital importance, should be made Director of Pasteur Institute, Coonoor 17,107-37.
———, McCay, Col., work of on nutritive value of grains (731).
———, milk 17,176-8.
———, Palal Village, dietary of cultivator in 17,268-72.
———, physical deterioration, due to under-feeding, examples of (733-4), 17,141-2.
———, average labourer usually below par and has no reserve 17,186-7, 17,219-23.

HUTCHINSON, Major-General F. H. G.—*contd.*

WELFARE OF RURAL POPULATION—*contd.*

Nutrition, protein deficiency responsible for lack of resistance to infection and physical deterioration (735).
———, psychological effect of malnutrition (734).
———, pulses, normal output 260,000 tons, rich in protein, insufficient in quantity (735), 17,224-6.
———, research, lines of (734-5), 17,214-8.
———, ———, All-India or Provincial? 17,254-7.
———, rice: when consumed in large quantities 50 per cent. of proteid value absorbed (732), (735), 17,175.
———, ———, people waste money on too much rice 17,178, 17,188-93.
———, sugar 17,236-8.
———, vitamins, investigation as to, of incalculable importance (731-2).
———, ———, great shortage of 17,179-81.
———, yield, normal, of food grains in Madras Presidency (731), 17,224-9, 17,247-51.
Water supply, bad, cause of disease: 17,157-74, 17,274-7.

IMPLEMENTS.

Bullocks, poor quality of, prevents adoption of improved implements (*R. Mudaliar*) (703).
Consolidation of holdings necessary to enable cultivators to use improved implements (*Subbarayan*) (541).
Co-operative societies should undertake distribution (*Anstead*) (48).
Demonstration necessary (*S. Mudaliar*) (427).
Factors limiting use of, price and cattle (*Anstead*) (48).
Improvement of existing machinery preferable to introduction of new machinery (*Anstead*) (48), 9652-61.
Industrial Engineer investigates (*Bazl-ul-Lah and Pinto*) 14,180-4.
Long-term loans at low rates of interest should be given by Government (*R. Mudaliar*) (703-4).
Manufacturers, small (*Anstead*) 10,684.
———, indigenous, none (*Bazl-ul-Lah and Pinto*) 14,185-6.
Needs, improved ploughs, harvesters, sugarcane crushers (*R. Mudaliar*) (703).
None have been designed superior to indigenous tools (*R. Mudaliar*) (698), 16,847-58.
Ploughs, improved, 6,000 in use, mass production (*Anstead*) 10,136-9.
Prices: must be reasonable (*Kollengode*) (190).
———, must be lowered (*Subbarayan*) (541).
———, Government should supply at moderate prices (*S. Mudaliar*) (427).
Progress in, fairly good (*Anstead*) (48).
Propaganda necessary (*Paul*) (227).
Research engineer required (*Anstead*) (48), 10,683.
Subsidies should be given to Indian manufacturers to make agricultural implements (*R. Mudaliar*) (703), 16,804-6.

IRRIGATION (*see* **MULLINGS**).

Administration (*MacMichael*) 11,875-91, 12,303-7.
Agricultural Department, has no touch with Irrigation Department (*Anstead*) 9538-48.
———, ———, disagree as to water-requirements of sugarcane 9566-73.
Bellary, ample scope for new schemes (*R. Mudaliar*) (700).
Bhavani, Upper, Dry Project, instructions of Board of Revenue (*MacMichael*) (305-7).
Canal water, there should be co-operation between Agricultural and Irrigation Departments as to supply of (*Subbarayan*) (540).
Cauvery-Mettur Project, Salem should be included in (*Subbarayan*) (540), 15,127-37, (*Narasimharaju*) 15,572-84.
Ceded Districts new schemes needed, in (*R. Mudaliar*) (700).

IRRIGATION— *contd.*

Concessions in respect of fodder and green manure crops (*MacMichael*) 11,874.
Co-operative labour unions, irrigation contract works should be handed over to (*Ramdas and Sivaswami*) (677).
Crop insurance, private enterprise will not undertake (*Ramdas and Sivaswami*) (677).
Crops, first and second (*Reddi*) 12,888-9.
Delay in repair of works (*Ramdas and Sivaswami*) (677).
Demand for land, effect on (*MacMichael*) 12,325-9.
Depressed classes do not complain about (*Sutherland*) 13,543.
Experimental borings necessary (*Paul*) (226).
Famine protection, standard of (*Paul*) (225), (*Anstead*) 10,352-7, 10,364-5.
———, losses from, greater than costs of irrigation schemes (*R. Mudaliar*) (701), 16,787-92.
Finance, the first obstacle to extension of (*Reddi*) (347), 12,866-84.
Godavari District, one of the best systems in India, but should be extended (*Reddi*) (347), 12,956-61.
Hydro-electric schemes (*Anstead*) 10,366-71, 11,854-7, 11,954-6.
Interest of 10 per cent. is being realised on 830 lakhs (*Reddi*) (348), 13,047-51.
Kiari system suggested (*MacMichael*) (269).
Kistna reservoir project, considered remunerative (*Reddi*) (347).
Legislation: proposed (*MacMichael*) 11,840-53.
———, required for compulsion of minorities and exclusion of irrigation matters from Civil Courts (*Leach*) (589), 15,696-701.
Lift irrigation, bullock power, should be developed (*Subbarayan*) (536), 14,866-70.
———, improved methods (*Subbarayan*) 15,267-9.
Madura, schemes for (*S. Mudaliar*) (426), cost 30 crores, irrigating 2 million acres 13,696-9.
———, finance of (*S. Mudaliar*) 13,784-809.
Malabar (*Kollengode*) (190).
Mettur project to cost 6 crores and irrigate 3 lakhs of acres (*Reddi*) (347), a productive scheme 12,866-77.
Minor works, require more attention (*Anstead*) (41), 9553-9, 9564-5.
———, co-operative societies (*Anstead*) 10,489-91.
———, should be encouraged (*Kollengode*) (190).
———, Government should compel ryots to carry out (*S. Mudaliar*) (426-7).
Nandalar, defective drainage, urgency of (*S. Mudaliar*) (427).
Obstacles, in Bellary, want of understanding and imagination of Government (*R. Mudaliar*) (701), 16,793-801, 17,053-64.
Panchayats (*MacMichael*) (269), 12,127-31.
———, under Irrigation Bill (*Randas* and *Sivaswami*) (677).
———, minor irrigation works should be handed over to (*Ramdas and Sivaswami*) (680).
Perennial rivers (*Anstead*) 10,558-9.
Piccotah (*Narasimharaju*) 15,373-84.
Productive works, policy as to, wrong (*Reddi*) (348), 12,916-25.
———, increased general revenue caused by should be taken into consideration (*Reddi*) 13,109-15.
Proportion of irrigated and unirrigated (*MacMichael*) 12,258-63, (312).
Protective and productive schemes (*MacMichael*) 11,840-60, 12,312-24, (*Reddi*) (348).
Protective schemes afford insurance against famine (*MacMichael*) 11,861-5.
Rainfall, no statement from Meteorological Office (*Subbarayan*) 14,980-2.
Registration of agreements as to private works (*MacMichael*), 12,072-82.
Research (*Kollengode*) (188).
Salem, a dry area, sinking water table, wells sunk at expense of cultivator (*Subbarayan*) 14,945-9.
———, two crops well-irrigated (*Subbarayan*) 14,950-1.
———, necessity for irrigation in (*Paul*) (225-6), 11,414-6, 11,628-30.
Schemes (*Anstead*) 9537.
———, extent of (*MacMichael*) (266-7), 11,906-14.

IRRIGATION—*contd.*

Schemes, minor (*MacMichael*) (268).
——, new, obstacles to, cost, interference with existing rights, consequent higher assessment (*Leach*) (589).
——, new, necessary in Vizagapatam, legislation required (*Narasimharaju*) (570).
——, hindered by vested rights of zamindars (*Narasimharaju*) 15,329, 15,343-53, 15,359-72, 15,385-8, 15,437-43.
Survey of subterranean sources of water (*MacMichael*) 12,057-60.
Taccavi loans for deepening wells (*MacMichael*) 11,806-7.
——————, in dry areas 11,867-72.
Tanks, maintenance of (*MacMichael*) 12,278-84.
——, and ponds, no question of extending but should be improved (*Reddi*) (347).
Touch between Irrigation and Agricultural Departments (*MacMichael*) 11,875-91, 12,054-6, 12,270-3.
Tungabadra project, to command 35 lakhs of acres of famine country (*Reddi*) (347).
——————, should not be delayed (*R. Mudaliar*) (700-1).
Value of land affected by (*Anstead*) 10,553-7.
Volumetric charge, ideal but difficult (*Anstead*) 9674-6.
——————, co-operation needed (*MacMichael*) (268-9), 12,018-24.
Waste of water, due to unevenness of land (*R. Mudaliar*) (701).
——————, of canal water (*MacMichael*) (268).
——————, should Munsiff be responsible? 12,072-3, 12,270-3.
——————, by evaporation or absorption in soil (*Reddi*) (349).
Water diviner (*MacMichael*) (268), 11,866, 11,928-31.
Water rates and land revenue, enhancement of land revenue in view of irrigation (*MacMichael*) 11,932-49, 12,061-2, 12,199-207, 11,932-80, 11,989-91, 12,015-30, 12,171-94, (*S. Mudaliar*) 13,775-83, 13,878-84, (*Subbarayan*) 15,194-212, 15,253-9.
Water requirements of crops (*Anstead*) 10,546-51.
Wells: (*See under* **BAZL-UL-LAH** *and* **PINTO**) (*Anstead*) 10,513-25.
——, Waterlifts, &c., handed over to Industrial Department (*Anstead*) 10,098-100, 10,679-82.
——, State should undertake sinking (*Leach*) (589), 15,598-9, 15,615-9, 15,657-61.
——, (*MacMichael*) (268), 11,915-31.
——, land revenue assessment not increased because of sinking of wells (*MacMichael*) 12,199-207.
——, cost and effectiveness of (*MacMichael*) 12,211-6.
——, water should be supplied at cost in selected villages (*R. Mudaliar*) (701).
——, loans should be given by Government (*S. Mudaliar*) (427).
——, not sufficient (*Narasimharaju*) 15,420-2.
——, economic value of (*Paul*) 11,619-26, 11,641-2.
——, sinking of: Government should do boring free of cost (*Ramdas and Sivaswami*) (677).
——, societies for sinking wells should be formed (*Ramdas and Sivaswami*) (677).
——, Industries Department has undertaken boring and assisting ryots (*Reddi*) (347).
——, large scope for extension of (*Reddi*) (347).
——, system necessary for deepening (*Subbarayan*) (540).
——, in some places impossible to dig (*Subbarayan*) 14,964-5.
——, increase desirable (*Subbarayan*) 15,273.
——, under Estates Land Act rent can be raised after sinking of wells (*Subbarayan*) 15,274-7.
——, in Chingleput (*Sutherland*) 13,679-83.

KEITH, J. W., and WOOD, C. E., representatives of Messrs. Parry & Co., Madras.

AGRICULTURAL INDUSTRIES:
Government, should not take any steps to establish industries subsidiary to agriculture (763).
——————, should not interfere with private enterprise 17,468-79.
Poultry farming and market gardening (761).

KEITH, J., and WOOD, C. E.—*contd.*

DEMONSTRATION AND PROPAGANDA:

Artificial fertilisers, use of (761).
————, should be on ryot's own land 17,413-7.

EDUCATION:

College for training sons of mirasdars in agriculture would be of great value (761).

FERTILISERS:

Adulteration, not of great importance, usually due not to fraud but to defective methods of manufacture (761), 17,418-23, 17,496.
Artificial fertilisers, application of, profitable on normal soils (761), 17,463-7.
Co-operative societies should finance purchase of fertilisers from private manufacturers (762), 17,428-30, 17,454-8.
Demand, nature of 17,489-506.
Demonstration and advertisement of, necessary (761).
————, should be on ryot's own land 17,413-7.
Distribution through series of local depots fed from central factory (762).
European demand for artificial fertilisers greater than Indian 17,459-60.
Export of bones and poonac should not be prohibited until there is an indication that the bones will all be consumed in India, such prohibition would not lower prices to agriculturists, except perhaps temporarily 17,436-50, (769-70).
Free distribution by private firms of fertilisers for experimental purposes (761).
Inspection liable to hamper fertiliser industry (761).
Method of manufacturer 17,451-3, 17,461-2, 17,482-6.
Organic manure also necessary (765).
Records of experiments done by Agricultural Department not accessible (763).
Remission of land tax, should be larger, in case of failure of crops, to cultivators using manures, selected seeds or improved implements (762).
Research: by Agricultural Department, by Messrs. Parry on behalf of Potash Supply Company of London (763).
Sales of, increasing (762-3), 17,431-3.
Shows should be utilised for propaganda (762).
Transport and storage 17,424-7.
————, railway freights a big factor 17,494-6.

KOLLENGODE, Sir Vasudeva, Rajah of, Kt., C.I.E., Malabar.

ADMINISTRATION:

Agricultural Service insufficient (189).
Railways unsatisfactory (189).
Roads, village, insufficient and ill maintained (189).
Veterinary service insufficient (189).

AGRICULTURAL INDEBTEDNESS:

Causes of (189).
Interest, loans should be provided at low rates (189).
Legislation with regard to insolvency inadvisable (189).
Mortgages, non-terminable, should be prohibited (189).

AGRICULTURAL INDUSTRIES:

Agricultural produce, preparation of for consumption (190).
Industrial concerns in rural areas (190).
Marketing, lack of facilities (190).
None at present 10,969-71.

ANIMAL HUSBANDRY:

Cattle-breeding 10,987-96.

KOLLENGODE, Sir Vasudeva, Rajah of, Kt., C.I.E.—*contd.*

ATTRACTING CAPITAL:

Sub-tenures, multiplicity of, handicap to improvement (190), 10,972-3, 11,018-22.

CO-OPERATION:

Credit societies 10,921-2.

CROPS AND CROP PROTECTION:

Mahali disease, spraying effective (190).
New crops, scope for (190), 10,985-6.
Seed selection and distribution (190), 10,966-8.
Wild animals, firearms (190).

CULTIVATION:

Meston plough (190).
Paddy, economic area 10,936-7.
——, transplantation 10,955-7.
Rotation not practised systematically 11,013-7.

DEMONSTRATION AND PROPAGANDA:

Demonstrators, lack of 10,942-6.

EDUCATION:

Adult education by night schools (189).
Extension necessary (188), 11,008-12.
Finance from land revenue (189).
Panchayats should control rural schools (189).
School farms necessary (188-190).
Students are agriculturists (188).
Teachers should be agriculturists (188).

FERTILISERS:

Cowdung, use of as fuel: cheap wood fuel (190).
Green manure 10,941.
Price should be reduced (190).
Propaganda necessary (190).

FINANCE:

Co-operative societies and banks necessary (189), 10,920-2, 10,974-8.
Government loans should be more easily available (189), 10,979-80, 11,023-4.
Income-tax on agriculture would be unpopular 10,920.
Interest, religious objections to 10,981-4.

HOLDINGS:

Economic area for paddy, 5 to 10 acres 10,936-7.
Fragmentation increasing 10,940.
——, Malabar 10,938-9.
Sub-division, should be prevented by legislation (189-190).
——, appointment of common manager 10,923-8.
——, legislation would be popular 11,025.
Sub-tenures, multiplicity of, handicap to improvement (190), 10,972-3, 10,997-11,007, 11,018-22.

IMPLEMENTS:

Prices must be reasonable (190).

IRRIGATION:

Malabar (190).
Minor projects should be encouraged (190).
Research (188).

MARKETING:

Lack of facilities preventing development of agricultural industries (190).

KOLLENGODE, Sir Vasudeva, Rajah of, Kt., C.I.E.—*contd.*

RESEARCH :

Importance of (188), 10,915-9.
Indigenous theory should be investigated (188).
Irrigation (188).
Soil (188).

VETERINARY :

Dispensaries, expansion of, needed (189-190).
Inoculation, demand for, great 10,929-35.

LEACH, A. G., I.C.S., Collector of North Arcot, Madras.

ADMINISTRATION :

Panchayats, village, have made a good beginning 15,639-46.
Revenue Department, duties of 15,748-51.
————, training in agriculture of officers of not advisable 15,752-60.
Roads 15,678-83.
——, Taluk Board should assist panchayats to control 15,683-7.

AGRICULTURAL INDEBTEDNESS :

Sub-division of holdings, not the main cause of 15,744-7.

AGRICULTURAL INDUSTRIES :

Extension of, not possible in North Arcot 15,761-2.

ANIMAL HUSBANDRY :

Castration, a good deal of, used to be done by touring veterinary assistants (590).
Cattle, useless, every village overstocked with (589).
Common grazing, causes promiscuous propagation (589).
————, panchayats might control (589), 15,688-92.
————, should be gradually abolished (589-90).
Draught animals, ryot does not appreciate importance of improvement of 15,600.
Panchayat control of forest grazing grounds 15,603-4.
Touring of veterinary assistants has been abolished (590), 15,619-22.

ATTRACTING CAPITAL :

Capital, no lack of, for acquiring agricultural land, but not so for improvement; land regarded as a safe but not paying investment (591), 15,662-5.
Factors discouraging improvement of land are personal (591-2).
Price of and profit from land 15,702-8.

CROPS AND CROP PROTECTION :

Money and food crops 15,763-6.

DEMONSTRATION AND PROPAGANDA :

Demonstrators do not reach ordinary cultivators 15,612-4, 15,630-4.
Literature issued by Agricultural Department 15,693-5.

EDUCATION :

Literacy the first objective (590-1), 15,605.
Nature study might be of use but is badly taught (591).
Teaching of agriculture in schools, not a practical method of improving agriculture (590).
————, average teacher hopeless as a teacher of agriculture 15,606-8.

FORESTS :

Denudation of hills causes silting of irrigation tanks (590).
Firewood should be produced (590).
Panchayats have done a small amount of afforestation (590).
Re-afforestation of hill sides too expensive (590).

LEACH, A. G., I.C.S.—*contd.*

HOLDINGS :

Colonies of depressed classes, wells sunk by Government (589), 15,674-7
Consolidation, should be initiated by Government (588), 15,593-7.
——————, administrative means should be tried before legislation which might not be enduring (588), 15,652-6.
——————, instance of success at Tinnevelly (588).
——————, should not be encouraged by temporary exemption from land revenue 15,672-3.
Fragmentation, due partly to desire of ryot to have plots growing different crops (588), 15,736-43.
——————, fairly considerable 15,646-51.
Registry, correct, kept by Government to collect land Revenue and check dishonesty, therefore, sub-division is registered (588).
Size of holdings 15,591-2, 15,649-51.
——————, poverty of small holders 15,666-8.
Sub-division not the main cause of indebtedness 15,744-7.

IRRIGATION :

Legislation required for compulsion of minorities and exclusion of irrigation matters from Civil Courts (589), 15,696-701.
Schemes, new, obstacles to, cost, interference with existing rights, consequent higher assessment (589).
Wells, State should undertake sinking (589), 15,598-9, 15,615-9, 15,657-61.

ROADS (*see* ADMINISTRATION).

VETERINARY :

Touring veterinary assistants, used to do a good deal of castration, but have been abolished (590), 15,619-22.

WELFARE OF RURAL POPULATION :

Complaints by ryots 15,678-81.
Conditions of labouring class unsatisfactory 15,709; in zamindari as compared with ryotwari districts 15,635-8.
Emigration 15,715-24.
Employment, labourer sometimes a slave 15,710-4.
Funds for rural improvement cannot be obtained by retrenchment of official salaries 15,725-9.
Labour of villagers for improvement of village 15,666-71.
Panchayats, village, have made a good beginning 15,639-46.
——————, are elected 15,730-5.
Slight manifestation of desire for improvement 15,623-9.

MACMICHAEL, N., I.C.S., First Member, Board of Revenue, Madras.

ADMINISTRATION :

Departments of Agriculture and Revenue 12,054-6, 12,225-8.
Departments of Irrigation and Agriculture 11,875-91.
Development Department 12,083-4.
Irrigation, control of 12,303-7.
Panchayats for forests 11,981-3.
——————, progress of (308).
——————, irrigation (269).
Provincial revenues, effect upon of increased prosperity of cultivators 11,794-801.
Remuneration of village staff by grant of land? 12,070-1.
Roads, village 12,293-302.

AGRICULTURAL INDEBTEDNESS (*see* FINANCE).

Co-operative movement should teach thrift 11,826-30.
Taccavi, popular amount of loans increasing (263), 11,802-11, 12,044-7.
——————, rules as to 11,812-25.

MACMICHAEL, N., I.C.S.—*contd.*

AGRICULTURAL INDEBTEDNESS—*contd.*

Taccavi, in dry areas 11,867-72.
———, in famine 11,992-12,002, 12,044-53.
———, rate of interest 12,241.
———, of moneylenders 12,242-6.
———, extent of indebtedness (309).
———, extent of taccavi (310-1).

AGRICULTURAL INDUSTRIES:

Ryots, most, have subsidiary occupations (264), 12,120-3.

AGRICULTURAL LABOUR:

Emigration 11,896-905, 12,274-6, 12,333-46.

ANIMAL HUSBANDRY:

Fodder and green manure crops, concessions as to water charges 11,874, 12,040-3.

CO-OPERATION:

Credit societies touch about 8 per cent. of rural population 12,155-8.
Irrigation societies for paying on volumetric basis (269).
Panchayats for irrigation (269).
Taccavi, societies should not administer 12,115-7.
Thrift, should teach 11,826-30, 11,892-3.

CULTIVATION:

Economic position, general 12,132-4.
Improvements in, considerable, past and future 11,787-91, 12,090-4.
———, cotton, considerable improvement in 11,790.
———, land 12,189-91.
———, paddy, transplanting 11,790-1, 12,094.
Irrigation 11,906-7.
Waste lands 12,031-9.

DEMONSTRATION AND PROPAGANDA:

Consolidation of holdings 12,198.
Demonstrators, agricultural, more required 12,286-9.
Revenue officials cannot do propaganda work 12,290-2.
Taccavi loans for purchase of seed 12,330-2.

EDUCATION:

Agricultural training, of doubtful value to Revenue officials 12-291-2.

FERTILISERS:

Green manure and fodder crops, concessions in water charges as to 11,874, 12,040-3.

FINANCE:

Research 11,794-801.
Taccavi and other Government loans, popular, amount increasing (263).
———, 1924-5 11,802-11.
———, rules as to 11,812-25, should not be relaxed 12,159-70, 12,207-10.
———, in dry areas 11,867-72, 11,992-12,002, 12,044-53.
———, formalities 12,107-8.
———, security 12,109-10.
———, percentage of applications refused 12,111-4.
———, co-operation 12,115-7.
———, tenants-at-will 12,142-6.
———, proportion of loans per cultivated acre, 1 anna per annum 12,147-58.

MACMICHAEL, N., I.C.S.—*contd.*

FINANCE—*contd.*

Taccavi and other Government loans, amount of loans compared with revenue 12,229-40.
——————, rate of interest 12,241-6.
——————, for purchase of seed 12,330-2.
——————, extent of indebtedness (309).
——————, extent of taccavi (310-1).

FORESTS:

Panchayats 11,981-3.
——————, progress of (308).

HOLDINGS:

Enquiry as to, very little 12,264-9.
Fragmentation and sub-division, Co-operative societies (266).
——————, economic holding difficult to determine (264-5), 12,009-14.
——————, experiment in Trichinopoly (266).
——————, Government actively assists sub-division (264), 12,118-9.
——————, inevitable owing to tradition (264) 11,835-9.
——————, not a burning question 12,195-7.
——————, Keatinge's Bill (265-6).
——————, revenue difficulties 11,831-4.
——————, population, increase in (264).
——————, Punjab experiment (266).
——————, consolidation would simplify revenue 11,831-2.
——————, Resolution of Legislative Council in 1917 (265).
——————, statistics of, unreliable (264).
Non-culturable, free 12,325-9.
Pattas, figures as to (304).
Statistics 12,132-44.
Zamindari, proportion of 12,309-11.

IRRIGATION:

Administration of 11,875-91, 12,303-7.
Bhavani, Upper, Dry Project, instructions of Board of Revenue (305-7).
Concessions in respect of fodder and green manure crops 11,874.
Demand for land, effect on 12,325-9.
Hydro-electric schemes 11,854-7, 11,954-6.
Kiari system suggested (269).
Legislation proposed 11,840-53.
Panchayats for (269), 12,127-31.
Proportion of irrigated and unirrigated 12,258-63, (312).
Protective and productive schemes 11,840-60, 12,312-24.
Protective schemes afford insurance against famine 11,861-5.
Registration of agreements as to private works 12,072-82.
Schemes, extent of (266-7), 11,906-14.
——————, minor (268).
Survey of subterranean sources of water 12,057-60.
Taccavi loans for deepening wells 11,806-7.
——————, in dry areas 11,867-72.
Tanks, maintenance of 12,278-84.
Touch between Irrigation and Agricultural Departments 11875-91, 12,054-6, 12,270-3.
Volumetric charge, co-operation needed (268-9), 12,018-24.
Waste of canal water (268).
——————, should Munsiff be responsible? 12,072-3, 12,270-3.
Water diviner (268), 11,866, 11,928-31.
Water rates and land revenue, enhancement of land revenue in view of irrigation 11,932-49, 12,061-2, 12,199-207, 11,932-80, 11,989-91, 12,015-30, 12,171-94.

MACMICHAEL, N., I.C.S.—*contd.*

IRRIGATION—*contd.*

Wells (268), 11,915-31.
——, land revenue assessment not increased because of sinking of wells 12,199-207.
——, cost and effectiveness of 12,211-6.

MARKETING:

Roads, village, some in bad condition in wet season 12,293-302.

RESEARCH:

Agricultural Department, interest in by large landholders 12,085-9.
Results, considerable 11,787-93.
——, effect upon Government revenue 11,794-801.

SOILS:

Land revenue assessment in relation to 12,095-105.
Survey 12,100-1.

STATISTICS:

Agricultural stock, not very accurate (269).
Cultivation and crop, are satisfactory (269) 12,063.
Economic Enquiry Committee (269).
Economic position, general 12,132-41.
Indebtedness 12,048-53.
Pattas (304).
Rail-borne inter-Provincial trade 11,873.
Reports of villages 12,063-9.
Ryotwari, more reliable than as to zamindari tracts 11,984.

WELFARE:

Agricultural problem, not exclusively an 12,213-24.
Emigration 11,896-905, 12,274-6, 12,333-46.
Standard of life 11,893-5.
——, with reference to fragmentation 12,009-14.
Survey, economic, as to position of ryots 12,285-6.
Thrift essential 11,826-7, 11,892-3, 11,985-8, 12,003-8.
——, examples of extravagance 12,247-57.
——, is there a margin on which to save 12,258-63.

MANURE (*see* **FERTILISERS.**)

MARKETING.

Adulteration, very common (*Anstead*) (52).
——, co-operative societies should sell standard qualities (*Anstead*) (53).
Advances on value of crop before harvesting (*Anstead*) (57).
Barter (*Anstead*) (57).
Commission rates (*Anstead*) (57) 9923.
Communications unsatisfactory (*Paul*) 11,595-7.
Co-operative credit would strengthen position of ryot; co-operative sale society not likely to succeed at present (*Anstead*) (56), but in future should improve quality of exported goods by grading (58).
Cotton, ryots at a disadvantage in selling (*Anstead*) (55-6).
Dues (*Anstead*) (56), 9880-9.
Education, the means of improvement of (*Anstead*) (56).
Export, multiplicity of intermediaries (*Anstead*) (56).
——, fairer to cultivator than internal market (*Anstead*) 9873-5.
Facilities unsatisfactory (*Anstead*) (55).
——, special officer should be appointed (*Anstead*) 9870-2.
Groundnut largely exported (*Anstead*) (56).
——, decortication (*Anstead*) 9897-9904.

MARKETING—*contd.*

Information as to market prices &c. would be of little value to cultivators under present conditions (*Anstead*) (58).
——————, should be made available to cultivators (*R. Mudaliar*) (706).
——————, facilities for obtaining, satisfactory (*Munro*) 11,729-33.
Intermediaries treat cultivators unfairly (*R. Mudaliar*) (706).
Jaggery, quality of, must be improved (*R. Mudaliar*) (706).
———, importance of storage for price (*Narasimharaju*) 15,337-9.
Lack of facilities preventing development of agricultural industries (*Kollengode*) (190).
Legislation needed for control of markets (*Anstead*) (54).
Licensing of middlemen, public opinion not ripe for (*Anstead*) 9893-4, 9913-7.
Middlemen and moneylenders largely control (*Anstead*) (55 & 56), 9876-9.
——————, no free samples (*Anstead*) 10,707.
Milkmen's co-operative societies (*Anstead*) (51), 9760-76.
Poultry (*Sutherland*) (402).
Profits, division of (*Rao*) 9235-8.
Railways, no complaint (*Anstead*) 9480-9.
Roads, unsatisfactory (*Anstead*) 9490-9, 10,287-10,303.
———, village, some in bad condition in wet season (*MacMichael*) 12,293-302.
Silkworm cocoons (*Rao*) 9177-81.
Silk, artificial, competition of, with real silk (*Rao*) 9057-65, 9114-6.
Shandies (*Subbarayan*) 15,036-42.
Storage facilities for grain very practical (*Anstead*) 9918-22, 10,423.
Sugarcane, bad conditions (*Anstead*) (56), 9905-17.
Tea (*Munro*) 11,748-50.
Tirrupur Cotton Market, history of (*Anstead*) (53) 9864-9.
Transport system must be improved (*Anstead*) (54-5).
Weighing, control of in ginning factories, ineffective (*Anstead*) (47).
Weights and measures, standardisation of, a crying need (*Anstead*) (58) 9895-6.

MUDALIAR, M. R. Ry. A. Ranganatha, M.L.C., Madras.

ADMINISTRATION:

Conferences of heads of departments should be held (699).
Government of India, advantage to Provinces of additional scientific staff, doubtful (699), 16,876.
Meteorological Department renders no service to agriculturists (699), 16,910-1.
Posts and Telegraphs, Postal service too costly (699).
——————, telegraphic reports of agricultural prices should be given (699).
——————, wireless should be used for broadcasting agricultural information (699).
Research staff should be strengthened (699).
Roads inadequate (699).
———, are deteriorating 16,776-8.
———, lack of funds, panchayats should control 16,975-81, 17,044-52.
Transport charges should be reduced (699), 16,779-80, 17,024-9.

AGRICULTURAL INDEBTEDNESS:

Causes of, purchase of land and livestock, marriages, etc., trade and speculation, buildings, permanent improvements (699).
Increasing 16,920-30.
Legislation for complete liquidation of existing debts (700), 16,930-2.
——————, Government loans 16,982-17,014, 17,101-2.
Remedies for (700).
Repayment prevented by, failure of crops, high interest, insufficient income and lack of subsidiary industries (700).

MUDALIAR, R.—*contd.*

AGRICULTURAL INDEBTEDNESS—*contd.*

Restriction of credit of cultivators inadvisable, but there should be restriction on cultivators who are borrowing from Government (700), 16,947.
Sources of credit, taccavi, co-operative societies and moneylenders (699).

AGRICULTURAL INDUSTRIES:

Employment may be supplied by Government and Local Boards on road and tank repairs, village improvements, water supply, etc. (706).
Government should encourage industries connected with the preparation of sugar, cotton seed used for felt, rice straw for paper (706).
Panchayats should organise work by villagers for village improvement (706).
Period of unemployment, 180 to 250 days a year (706).
Ropemaking (706).
Water, lack of supply of, chief obstacle to (706).

ANIMAL HUSBANDRY:

Artificial manure, production of, might help ryot to reduce number of cattle (705), 16,942.
Bellary District, Government breeding station should be established in (705).
Dairying, milch buffalo should be improved (705).
————, doubtful whether cow can take place of milch buffalo 16,810.
Deterioration of cattle caused by promiscuous breeding and insufficient pasture land (705).
Fodder, times of shortage (705).
————, methods of improving supply of (705).

ATTRACTING CAPITAL:

Agriculture does not pay (706), but rent-collecting pays 16,816-8.
Land is a safe investment (706).
Landowners not interested in cultivation and improvement of land (707).
Non-cultivating landowners and tenants increasing (707), 17,087-100.
Settlement Reports in Bellary District misleading as to profitableness of agriculture (707).

CO-OPERATION:

Distribution of stock, seeds, implements, manures, should be undertaken (699).
Movement requires overhauling 16,781-3, 16,912-9.

CROPS AND CROP PROTECTION:

Cotton, introduction of new improved strain "Farm Cotton" in Bellary District (703).
Crops, important, jowari, paddy, groundnut, sugarcane, cotton (702).
Diseases, bollworm on cotton, calcaris on jowari, stem borer on paddy, swarming caterpillar on paddy, grasshopper on cereals (703).
Fodder crops suitable for dry soils should be introduced (702).
Seed distribution should be through co-operative societies (699).
Wild animals, fencing, barbed wire, should be supplied by Government (703).
————, licences for firearms (703).
————, permission to hunt in reserves by beats (703).
————, scrub jungle should be removed (703)

CULTIVATION:

Fallowing in dry lands should be investigated (703).
Ploughing, deep, should be done at least once every year (703).
Power machinery can be popularised by removing import duty on agricultural implements and by reducing prices of kerosine and petrol (703).

MUDALIAR, R.—*contd.*

CULTIVATION—*contd.*

Rotation on wet lands should be investigated (703).
Yield per acre stated to be consistently declining (707), 16,819-23, 17,035-43.

DEMONSTRATION AND PROPAGANDA:

Cinema should be used (699).
Demonstration fields should be leased by Government (698), 16,863-72.
Demonstrators, more required (698), 16,898-909.
Instalment system for sale of implements (699).
Lectures for farmers (699), 16,873-5.
Loans should be made to cultivators adopting improvements (698).
Paddy, economic transplantation adopted (698).
Pamphlets not of much use owing to illiteracy 16,871-2.
Ploughs, iron, and cotton seed, greater use of, examples of success of Agricultural Department (699).
Seed, distribution of better cotton seed has improved yield (698).
——, should be sold on credit (699).
Villages, should be selected for demonstrations (698).

EDUCATION:

Work in the fields, school children needed for (706).

FERTILISERS:

Adulteration of, may be prevented by cheap facilities for analysis (702), 16,802-3.
Cowdung, use of as fuel, should be prevented by cheap supply of other fuels (702).
Export of fish guano and bones should be prohibited (702).
Natural manures, greater use should be made of (702).
New fertilisers, samples should be supplied free (702).
Oilcake, oil pressing should be done in India (702).
————————————, by Government support 16,965-8.
Organic manures necessary (702).
Residual effect on soil of chemical fertilisers should be investigated (702), 16,933-9.
Sulphate of ammonia, residual effect of (702), 16,933-9.

FINANCE:

Capital available 16,965-74.
Co-operative credit societies, more required (699).
Distribution of stock, seeds, implements, manures, should be undertaken (699).
Loans should be made to cultivators at easy rates of interest (700), 16,784-6.
Long-term credit for land improvement and liquidation of existing debts (699).
Unification of credit agencies required (699).

FORESTS:

Deteriorating from excessive grazing (706).
Firewood, production of 17,065-72.
Panchayats should control grazing (706), 16,811-4, 16,948-51, 17,030-4, 17,069-79.

HOLDINGS:

Bullocks, pair, can work 15 acres 17,015-22.
Size of (706), 16,952-3.

IMPLEMENTS:

Bullocks, poor quality of, prevents adoption of improved implements (703).
Long-term loans at low rates of interest should be given by Government (703-4).

MUDALIAR, R.—*contd.*

IMPLEMENTS—*contd.*

Needs: improved ploughs, harvesters, sugarcane, crushers (703).
None have been designed superior to indigenous tools (698), 16,847-58.
Subsidies should be given to Indian manufacturers (703), 16,804-6.

IRRIGATION:

Bellary, ample scope for new schemes (700).
Ceded Districts, new schemes needed, in (700).
Famine, losses from, greater than cost of irrigation schemes (701), 16,787-92.
Obstacles, in Bellary, want of understanding and imagination of Government (701), 16,793-801, 17,053-64.
Tungabadra Scheme should not be delayed (700-1).
Waste of water due to unevenness of land (701).
Wells: water should be supplied at cost in selected villages (701).

MANURES. (*See under* FERTILISERS.)

MARKETING:

Information should be made available to cultivators (706).
Intermediaries treat cultivators unfairly (706).
Jaggery, quality of, must be improved (706).

RESEARCH:

Agricultural engineering, not very successful (698).
Foreign experts should not be employed (698), 16,835-9, 16,882-93.
Funds should be provided out of land revenue (698), 16,840-2, 16,943-6.
Implements, agricultural, none have been designed superior to indigenous tools (698), 16,847-58.
Indians, research should be done by, if necessary Indians should be sent abroad for training (698).
Indigenous methods should be investigated (698), 16,768-72.
Jowar, drought-resisting varieties, no work has been done to develop (698).
Millet specialist, experiments of, not encouraging (698), 16,773-5, 16,894-7.
Private research, not much 16,843-62.
Province should be divided into areas for research work (698), 16,824-30.
Red soil cultivation, insufficient attention has been paid to improvement of (698).
Theosophical Educational Trust, work of 16,877-93.

VETERINARY:

Conference of provincial expert officers desirable (705).
Contagious diseases, obstacles in dealing with (705).
Department should be under Director of Agriculture (704), 16,808-9.
———, agricultural demonstrator may attend to petty diseases 17,080-6.
Dispensaries, under Local Boards, very few and not likely to work well; control of should be transferred to Provincial authority (704), 16,807.
———, should be increased (704).
———, touring, full use has not been made of (704).
Expansion inadequate (704).
Research into animal diseases required (705).
Serum, no difficulty with regard to supply of (705).
Superior veterinary officer with Government of India not advisable (705).

WELFARE OF RURAL POPULATION:

Holdings, effect of size of (706). 16,952-3.
Land revenue, a large part of should be devoted to improving conditions of rural population (698), 16,840-2.
Surveys, economic, should be carried out (707).
Voluntary work 16,954-60.

MUDALIAR, M. T. Subramanya, Proprietor of Uttamapalayam, Member of the Madras Committee, Madras.

ADMINISTRATION :

Agricultural Service, degree of satisfaction with (425).
Collector, District, should be highest authority in agricultural matters (430).
Demonstration and Propaganda should be met out of a special grant by Government of India to Provincial Government (425).
Railway freights should be reduced and wagons supplied promptly (425).
Research, expenses of, should be borne by Government of India (425).
Roads, village, inadequate and ill-kept (425).
———, through lack of funds 13,690-5, 13,834-6.
Veterinary Service, not satisfactory except to limited extent (425).

AGRICULTURAL INDEBTEDNESS :

Causes of, poor yield, bad seasons, cattle disease, cost of living and unemployment (426).
———, drink 13,929.
Government loan, through co-operative societies to liquidate existing debts (426).
———, extent of debt unknown 13,757-60.
Interest rates exorbitant (426).
———, maximum rate should be fixed (426), 13,943.
———, freedom from arrest for civil debt, surplus for saving 13,929-42, 13,944-7.

AGRICULTURAL INDUSTRIES :

Charka spinning (428).
Coolie work (428).
Demonstration and loans for bee-keeping, poultry rearing, fruit growing, &c. (428).
Industrial concerns should move to rural areas (429).
Machinery, should be supplied by Government cheaply (429).
Well-sinking in dry lands (428).
Work, number of days of, done by average cultivator during the year (428).

AGRICULTURAL LABOUR :

Wages in kind and money 13,734-6.

ANIMAL HUSBANDRY :

Castration (428).
Dairying industry, could be improved at Cantamanayakanur (428).
———, loans for should be granted by Government (428).
Fodder crops 13,866-7.
Fodder shortage in Madura (428).
Oilcake as cattle food 13,874-6.
Pastures, common, inadequate (428), 13,863-5.

ATTRACTING CAPITAL :

Agriculture not paying (429).
———, yield has decreased 13,702-14.
———, but value of land has increased 13,754-6.
———, yield 13,845-50, 13,948-54.
Demonstration of improved methods to show that agriculture will pay (429).
Factors tending to discourage improvements, want of funds and apprehension of taxation of improvements (429).
Rent, assessment and water rate 13,766-83, 13,845-59.

CO-OPERATION :

Facilities for should be given by Government (429).
———, audit and education 13,760-5.
Legislation to compel minorities to co-operate in joint schemes (429).
Solavandam credit society doing good work (429).

MUDALIAR, S.—*contd.*

CROPS AND CROP PROTECTION:

Fruit trees grown by District Board 13,837-44.
Groundnut, yield 13,877.
Paddy, yield 13,885-8, 13,948.
Scarcity of rain 13,868-71.
Seed distribution by Government (427).
Yield 13,845-50.

DEMONSTRATION AND PROPAGANDA:

Chemists, Government, should give free advice as to soils and crops (425).
Demonstration farms in important centres (425).
Demonstrator, services of, should be free to experimenting landholders (425).
Fertilisers, oilcakes, fish, nightsoil (424).
Madura in (425).
Solavandam Farm, success of experiment at (425).
Varichiyur Farm, failure of experiment at (425).

EDUCATION:

Adult, in rural tracts, may be popularised by demonstration farms (424).
Coimbatore Agricultural College, Government Service, the usual incentive to students (424).
————, pupils not mainly drawn from agricultural classes (424).
Elementary and middle schools, agriculture should be taught in (424).
————, and in all schools and colleges (429).
————, Elementary schools may be under Local Boards (424).
————, Middle schools may be under Provincial Government (424).
Extension of, urgent need for (424).
Hygiene and village sanitation (429).
Institutions, supply of insufficient (424).
Scholarships for middle class youths (424).
School farms necessary (424).
Students, agricultural, mostly from non-agricultural classes (424).
————, teachers, agricultural, supply of, not sufficient (424).
————, in rural areas should be drawn from agricultural classes (424).

FERTILISERS:

Artificial, inferior to natural manure 13,715-21.
Bones, export of should be prohibited 13,831-3, 13,872-3.
Cowdung, taking of from fields by strangers should be penalised (427).
————, to prevent use of as fuel, trees should be grown to supply cheap fuel to villagers (427).
Demonstration of (427).
Export of all manures should be prohibited (427).
Green manure, distribution of seed and demonstration 13,722-5.
Nightsoil, the cheapest manure 13,725-9.
————, improving hygienic conditions 13,860-3.
Oil crushing plant, facilities for purchase of through co-operative societies should be given by Government (427).
————, export duty on oilcake 13,822-30.
Price of, should be reduced (427).
————, test of value 13,726-9.
Superphosphates, experiments with 13,810-21.
Waste of manure (427).

FINANCE:

Co-operative societies in every village for loans, purchase and sale and storage (425).
Long-term credit (426).
Taccavi should be administered through co-operative societies (426).

MUDALIAR, S.—*contd.*

FORESTS:

Erosion should be prevented by re-afforestation (429).
Excessive grazing not injuring forests (429).
Firewood, supply of should be increased by growing trees on Government lands (429).

HOLDINGS:

Legislation to prevent fragmentation impracticable (426).
Tenure, landlord's share 13,889-928.

IMPLEMENTS:

Demonstration necessary (427).
Prices, Government should supply at moderate prices (427).

IRRIGATION:

Madura, schemes for (426).
———, cost 30 crores, irrigating two million acres 13,696-9.
———, finance of 13,784-809.
Minor works, Government should compel ryots to carry out (426-7).
Nandalar, drainage defective, urgency of (427).
Water rate 13,775-83, 13,878-84.
Wells: loans should be given by Government (427).

RESEARCH:

Government of India should control (424).
———, and pay for 13,686-9.
Indians may be sent abroad for training (424).
Linguistic areas, selection of Indians with reference to (424).
Provincial Governments may demonstrate results (424).
Superphosphates 13,810-21.
Vernaculars, publications should be in (424), 13,739-43.

VETERINARY:

Contagious diseases, methods for preventing spread of, successful to a very limited extent (425).
———, legislation to deal with, at cost of Government (428).
———, rinderpest 13,744-7.
Cost of Service excessive (428).
———, but would be too costly if no charge were made, owing to travelling expenses 13,748-52.
Department should be under Director of Agriculture (428).
———, in order to decrease cost 13,700-1.
Indigenous treatment should be investigated and adopted (428).
Madura District, existing institutions in, do not serve any useful purpose (428).
Research into animal diseases, further facilities desirable (428).
Service not satisfactory (425).
Superior Veterinary Officer with the Government of India should not be appointed (428).

WELFARE OF RURAL POPULATION:

Education in hygiene and village sanitation (429).
Nightsoil, disposal of 13,860-3.
Surveys, economic, should be conducted by Government (429).

MUDALIYAR, D. (*see under* **HOOD** and **MUDALIYAR**).

MULLINGS, C. T., Chief Engineer for Irrigation, Madras.

IRRIGATION:

Advisory Boards, working very well 14,736.
————, functions, 14,747-50, 14,781-3.
Assessment, system of 14,637-42.
————, by Revenue Department 14,776-80.
Charges, volumetric ideal but difficult to manage 14,578-9.
————, should be increased 14,614-25.
————, incidence 14,784-7.
Co-operative organisation for clearing silt, none 14,851-4.
Distribution of water 14,663-71.
————, panchayats 14,737-8, 14,767-8, 14,739-45.
————, continuous flow 14,761-6.
Drainage, Irrigation Department responsible for 14,588-90.
Extent, total acreage of four schemes will be over 4 lakhs acres 14,556-7.
————, since Irrigation Committee reported, about a quarter million acres put under irrigation 14,600-14, 14,755-60.
Financial considerations holding up schemes 14,507.
Hydro-electric development, administration 14,519-22.
————, Pykara, about 5 crores, variation of estimate 14,522-30.
————, no industrial demand for power 14,531-44, 14,649-54, 14,690-4, 14,727-31, 14,733.
Kiari system suggested by the Revenue Department 14,958-9.
Lifting, cost of 14,672-7.
Loss of water by evaporation 14,836-40, 14,848-50.
Productive and protective schemes: income of productive schemes might be used to finance protective 14,492-5.
Profit and loss 14,788-99, 14,808-13.
Projects:
Bellary West Canal Project, to be productive 14,555-6.
————, may be undertaken in the course of next few years 14,561, 14,723.
Bhavani, Upper, Project, area 14,505.
————, Agricultural Department may not have been consulted 14,507-11.
————, under consideration, a productive scheme 14,552-4.
————, cheapest to use plant from Cauvury-Mettur Project 14,561, 14,720-2.
Cauvury-Mettur Project, 301,000 acres of new crops 14,506.
————, under construction, to pay a dividend of 7½ per cent. 14,547-50.
————, will be finished in 7½ years 14,558, 14,644-8, 14,655-62.
————, agreement with Mysore State 14,685-9, 14,695-719.
Deccan rivers protective Scheme, not in collaboration with Bombay 14,496-9.
————, Hyderabad, negotiations with 14,500-1.
————, area 14,502-4.
Divi Scheme, capital cost 23 lakhs, maintenance Rs.5 an acre 14,846-7.
Kistna Project 14,632-6, 14,814-26.
Polavaram Project, under construction 14,551.
————, will be finished by the end of 1927 14,559-60.
Tungabadra Project 14,626-31, 14,814-26.
Research, none by Irrigation Department 14,595-7.
————, should be done by Agricultural Department 14,724-6, 14,751-4.
————, none as to leakage 14,800-3.
————, or water requirements of crops 14,804-7, 14,840-3.
————, soil survey 14,844-5.
————, dry schemes 14,857-60.
Saline lands 14,591-4.
Tanks 14,729-75.
Technical advice 14,831-5.

MULLINGS, C. T.—*contd.*

IRRIGATION—*contd.*

Touch between Irrigation and Agricultural Departments, through Revenue Department 14,507-18, 14,746.
Water requirements of cultivation 14,580-7, 14,827-30.
Wells 14,562-77.

MUNRO, D. G., B.Sc., General Scientific Officer, United Planters' Association of Southern India.

ADMINISTRATION:

United Planters' Association of Southern India (255-262).

CROPS AND CROP PROTECTION:

Cinchona 11,738-43.
Coffee, declining area of, small capital required (255).
———, varieties 11,763.
Potatoes 11,744.
Tea (255), 11,734-8, 11,748-69.
United Planters' Association, crops of tea, coffee, rubber, cinchona and spices 11,689-90, 11,694.
———, improvement of crops of, possible (256).

CULTIVATION:

Altitude required by coffee, tea, rubber, cinchona 11,734-8.
Small holders cultivating coffee 11,722-8.

EDUCATION:

Post-graduate study required for Departmental work (255), 11,717.

FERTILISERS:

Cattle manure, difficulty in obtaining (256), 11,751-2.
Extent of use of (256).
Instances of benefits of (256).
Pests and diseases affected by (256), 11,718-21.
Research required (256).
Tea, fertilisers for 11,764-9.

MARKETING:

Information, facilities for obtaining, satisfactory 11,729-33.
Tea 11,748-50.

RESEARCH:

Central institute should be strengthened (255).
Coffee, more difficult to obtain results than with regard to rubber and tea (255), 11,763.
Fertilisers (256).
Rubber, visits to Ceylon, Malaya and Java (255).
Tea Association Experimental Station at Tocklai (255), 11,755-69.
United Planters' Association of Southern India, Area of operations 11,770-6.
———, Crop organisation of 11,711-2.
———, Finance (255), 11,691-4, 11,703-8, 11,745-7, 11,777-84.
———, Touch with Agricultural Department 11,709-10.
———, Touch with Indian Tea Association 11,695-11,702.

SOILS:

Erosion, considerable work done on (255-6).

NARASIMHARAJU, Rao Bahadur, C.V.S., M.L.C., landholder, Vizagapatam, Madras.

ADMINISTRATION:

Panchayats, village, should be encouraged 15,537-56.
Roads under control of local authorities have not deteriorated 15,569-71.

AGRICULTURAL INDEBTEDNESS:

Causes of, failure of crops, marriages, etc., buildings, purchase of cattle (570).
Insolvency, rural, not common (570).
Land mortgage banks under Government (570).
Moneylenders, methods of 15,340-2, 15,503-11.
Mortgages, non-terminable, no practice of (570).
Repayment prevented by failure of crops (570).
Restriction of credit of cultivators inadvisable (570), 15,315-7.
Source of credit, the holding and the moneylender (570).
Usurious Loans Act may involve hardship to the cultivators unless land mortgage banks are started (570).

AGRICULTURAL INDUSTRIES:

Spinning and weaving, hand, propaganda 15,486-9.

CO-OPERATION:

Credit societies require control 15,311-4.

CROPS AND CROP PROTECTION:

Money and food crops 15,468-74.
Sugarcane 15,333-6.

DEMONSTRATION AND PROPAGANDA:

Agricultural Advisory Boards 15,454-6.
Anakapalle farm 15,475-9.
Demonstration, successful in regard to sugarcane cultivation (570).
———, importance of 15,480-1.
———, farms not of much importance 15,480-5.
———, on cultivator's own plot desirable 15,480-5.
Demonstrators in close and sympathetic touch with cultivators, popular, do not deal with marketing 15,307-10.
Prizes should be given to cultivators adopting improved methods (569).
Propaganda is successful but number of propagandists not sufficient (569), 15,398-9.

EDUCATION:

Administration should be by local bodies (569).
Adult education can be popularised by capitation grants (569), 15,444 15,519-26.
Agricultural bent should be given to general education (569).
Agricultural College, only one for the whole Presidency (569).
Agricultural efficiency and education (570), 15,400.
Anakapalle Agricultural Middle School 15,534-6.
Attendance at agricultural Institutions not numerous (569).
Elementary education, entire cost of provided by Provincial Governments (569), 15,405-8.
Incentive, none, to study agriculture (569), 15,392-3.
Institutions, number of, insufficient (569).
Literacy the main objective rather than vocational training, vernacular 15,295-302.
Nature study, no work being done in owing to inability of teachers (569).
Panchayat-managed schools 15,552-6.
Pupils, agricultural, not mainly drawn from agricultural classes (569).
———, most seek Government employment, might be compelled to retire after 10 years' service (569), 15,303-6, 15,354-8, 15,409-10, 15,447-53, 15,512-8.
School farms, no work being done in owing to inability of teachers (569).
School plots, ditto (569).

NARASIMHARAJU, Rao Bahadur, C.V.S., M.L.C.—*contd.*

EDUCATION—*contd.*

System, old Madras, of two years' course in agriculture may be introduced in several districts (569), 15,394-7.
Teachers in rural areas need not necessarily be drawn from agricultural classes (569), 15,389-91.
Telugu districts should have an agricultural college, no agricultural facilities in Telugu districts except in Vizagapatam District (569), 15,401-4, 15,430-1, 15,527-33.
Vernacular scientific and technical education 15,423-9.
Vizagapatam District Educational Council, did not work satisfactorily 15,411-4.

FINANCE:

Co-operative societies unable to meet demand even for short-term loans (570).
Cultivator handicapped by lack of funds (570).
Land mortgage banks for long-term credit (570), 15,415-7.
Taccavi, may be given as seeds and manures (570).
———, adequate use not being made 15,418-9, 15,457-8, 15,568.

HOLDINGS:

Legislation may be possible to provide for exchange and compensation to consolidate holdings (570), 15,445-6.
Proportion of cultivator owners 15,459-67.
Size of 15,330-2.
Sub-division unavoidable owing to law of inheritance (570).
———, disadvantages of fragmentation very important 15,318-25.
———, consolidation on co-operative lines ineffective 15,326-8.

IRRIGATION:

Cauvury-Mettur project 15,572-84.
Piccotah 15,373-84.
Schemes, new, necessary in Vizagapatam, legislation required (570).
———, hindered by vested rights of zamindars 15,329, 15,343-53, 15,359-72, 15,385-8, 15,437-43.
Wells, not sufficient 15,420-2.

MARKETING:

Jaggery, importance of storage for price 15,337-9.

RESEARCH:

Fruit culture and millets, none in, except ragi and cholam (569).
———, considerable scope for fruit culture and preserving 15,286-94.
Groundnut and jute, research work done in the Department not appreciable (569).

WELFARE OF RURAL POPULATION:

Funds for rural improvements should be obtained by retrenchment in salaries of Government servants 15,559-68, 15,585-8.
Local bodies, work of, for rural betterment 15,490-502.
Panchayats, village, should be encouraged 15,537-56.

NUTRITION (human):

Bhutias, diet and work of (*Hutchinson*) (732-3), 17,252-3, 17,258-62.
Cause of malnutrition, poverty or ignorance (*Russell*) 14,432-51.
Co-ordination of Col. McCarrison's work at Coonoor, Agricultural Institute at Coimbatore and Animal Nutrition Enquiry at Bangalore (*Hutchinson*) 17,111-37.
Deficient, causes beriberi, keratomalacia, intestinal disease, malaria, leprosy, infantile mortality (*Russell*) (2490-1).
Diets: of agricultural workers on East Coast where beriberi is common (*Hutchinson*) (732).
———, a starvation diet (*Hutchinson*) (17,263-7, 17,273.

NUTRITION (human)—*contd.*

Diets of hill tribes of Bengal (*Hutchinson*) (732-3), 17,252-3.
——, of Indian troops (*Hutchinson*) (723), 17,252-3, 17,280.
Education dietary (*Hutchinson*) 17,182-5.
Export of food grains (*Hutchinson*) 17,138-40.
Famine followed by disease (*Hutchinson*) (734).
Ignorance the cause of malnutrition rather than poverty (*Hutchinson*) (734).
Institute, nutritional, required (*Russell*) (491).
McCarrison, Col., work of, of vital importance (*Hutchinson*) 17,107-37, (*Russell*) 14,234-5, 14,431.
————, should be made Director of Pasteur Institute, Coonoor (*Hutchinson*) 17,120-1.
McCay, Col., work of on nutritive value of grains (*Hutchinson*) (731).
Milk (*Hutchinson*) 17,176-8.
Palal Village, dietary of cultivator in (*Hutchinson*) 17,268-72.
Physical deterioration, due to under-feeding, examples of (*Hutchinson*) (733-4), 17,141-2.
————, Average labourer usually below par and has no reserve (*Hutchinson*) 17,186-7, 17,219-23.
Population, pressure of (*Russell*) 14,236-54.
————, Malthusian theory (*Russell*) 14,397-407.
————, Benefit of increased production owing to irrigation does not go to the cultivator (*Russell*) 14,440-1.
Protein deficiency responsible for lack of resistance to infection and physical deterioration (*Hutchinson*) (735).
Psychological effect of malnutrition (*Hutchinson*) (734).
Pulses, normal output 260,000 tons, rich in protein, insufficient in quantity (*Hutchinson*) (735), 17,224-6.
Research, lines of (*Hutchinson*) (734-5), 17,124-8.
————, All-India or Provincial? 17,254-7.
Rice, when consumed in large quantities 50 per cent. of proteid value absorbed (*Hutchinson*) (732), (735), 17,175.
——, waste through over-consumption of (*Hutchinson*) 17,178, 17,188-93.
Starvation during convalescence from disease (*Russell*) (480).
Sugar (*Hutchinson*) 17,236-8.
Teeth, diseases of, caused by calcium deficiency (*Russell*) 14,333-4.
Vitamins, investigations as to, of incalculable importance (*Hutchinson*) (731-2).
————, great shortage of (*Hutchinson*) 17,179-81.
Yield, normal, of food grains in Madras Presidency (*Hutchinson*) (731), 17,224-9, 17,247-51.

PADDISON, Sir George, I.C.S., C.S.I., K.B.E., Commissioner of Labour, Madras.

ADMINISTRATION:

Labour Department Budget 12,569-81, (343-4).
————, classes it deals with 12,569-81.

AGRICULTURAL INDEBTEDNESS:

Depressed classes, settled on the land 12,523-8.

AGRICULTURAL LABOUR:

Caste as affecting labourers (314-5).
Cost of living, no figures as to, 12,547-8.
Emigration (314 and 316-8).
————, from 1911 to 1921 Madras suffered net loss of 1½ millions of labourers (317).
————, of family unit 12,373-5.
————, Housing, Planters' Labour Act 12,376-90.
————, no restriction on freedom of emigrant 12,423-30.
————, effect on wages 12,431-40.
————, to Burma (317), 12,452-4, 12,459-62.
————, Indian Emigration Act, 1922, has improved conditions 12,489-90, 12,551.

PADDISON, Sir George, I.C.S., C.S.I., K.B.E.—*contd.*

AGRICULTURAL LABOUR—*contd.*

Emigration, figures of 12,582-8.
————, effect on labour supply 12,589-94.
————, direction of 12,595-603.
————, seasonal emigration to Burma 12,666.
————, restriction of free movements of labour would be unfair 12,670.
————, returned emigrants have good social influence 12,691-3.
Farm servants (314).
Holidays (315).
Housing, provision of (315), 12,376-80, 12,529.
————, tied cottages 12,642-6.
Industries, other than agriculture, factors affecting migration to 12,529-35, 12,544-5.
————, does not relieve rural congestion 12,690.
Labour Department Budget 12,569-81, (343-4); classes it deals with 12,569-81.
Labour, conditions and hours of (315).
————, regulation of not desired (315).
————, slavery 12,478-83.
————, hours not decreasing 12,549-51.
————, employer not at mercy of labourers at harvest 12,552-4.
Labourers (313).
————, co-operative societies (314), 12,355-6, 12,450-1, 12,469-70.
————, various kinds of 12,475-7.
————, no division between labourer and tenant classes 12,496-8.
————, economic future of depressed class promising 12,604-11.
————, number of (313).
Migration, within the Province 12,613-5.
————, housing accommodation 12,679-81.
Panchangamdar, village 12,647.
Population stationary 12,612.
Proportion to population (7 out of 10), (313).
————, occupiers and employés 12,623-7.
Shortage of labour, in Ganjam 12,446-9.
Uncultivated land, allotted to depressed class labourers 12,349-71, 12,455-8, 12,463-77.
————, protection from attachment for debt, 12,523-8.
Unemployment (316).
————, organisation of labour for village improvements 12,536-8.
Village workmen (313).
————, generally have a little land 12,499-501.
Wages (313-4).
————, continuous tendency to rise (317).
————, in kind very difficult to assess 12,391-3.
————, supplementals 12,502-14.
————, effect of emigration 12,430-4.
————, census of 12,435-45.
————, effect on standard of life 12,556-68, 12,616-22.
————, annual earnings? 12,649-55.
————, jail food allowance 12,656-9.
————, relation between nourishment and liability to disease 12,660-1.
Women labourers, reduction in numbers of, sign of prosperity (313-4), 12,515-22.
————, difficulty of providing maternity benefits 12,663-5.

CO-OPERATION:

Depressed classes in societies 12,688-9.
Housing, provision of 12,397-407.
Labourers (314 and 318), 12,355-6, 12,450-1, 12,463-73.

CROPS AND CROP PROTECTION:

Groundnut in sandy dry tracts 12,349-50.
Money crops as compared with food crops 12,694-6.

PADDISON, Sir George, I.C.S., C.S.I., K.B.E.—*contd.*

EDUCATION :

Compulsory, desirable 12,491-5.
———, to raise standard of living 12,564-8.

HOLDINGS :

Landless men being settled on holdings of four acres, economic position of 12,628-41.
Proportion of cultivating landowners decreasing while proportion of cultivating tenants increasing 12,684-7.
Uncultivated land allotted to depressed class labourers 12,349-71, 12,455-8, 12,463-8, 12,671-8.

SOILS :

Uncultivated, poor, assigned to depressed class labourers (318), 12,349-71.

STATISTICS :

Census reports 12,546.
Ratio between occupiers and employees 12,623-7.
Wages, in kind, very difficult to assess 12,391-3.
———, supplementals 12,502-14.
———, Census of 12,435-45.
———, insufficiency of staff prevents collection of data 12,539-48, 12,619-22.

WELFARE :

Drink, intoxicating (315).
———, a great improvement 12,484-8.
———, abkari revenue 4 to 5 crores 12,616-7.
———, local prohibition 12,682-3.
Drinking water supply, being improved (315).
———, Government supply for depressed classes, 12,395, 12,408-9.
Emigrants, returned, have good social influence 12,691-3.
Famine, causing unemployment (316).
Family budget not worked out 12,618.
Health, factors affecting (315).
Hookworm almost universal (315).
———, among people who do not wear shoes 12,410-3.
Housing, provision of (315), 12,376-80.
———, by Government and co-operative societies 12,397-407.
———, not built on piles 12,413-22.
———, unfortunate results of tied cottages 12,642-6.
Labour, conditions of (315).
Labourers' diet, no information as to 12,478-83.
Maternity, conditions of (315).
———, difficulty in providing women workers with maternity benefits 12,663-5.
Recreation (315).
Rural congestion not being relieved by expansion of industries 12,690.
Wages, effect of, on standard of living 12,556-68.
———, annual earnings? 12,649-55.
———, jail food allowance 12,656-9.
———, relation between nourishment and liability to disease 12,660-1.

PAUL, K. T., O.B.E., B.A., National Secretary, National Council of the Y.M.C.A.'s of India, Burma and Ceylon.

ADMINISTRATION :

Central Agricultural Board should be established (224), on a federal basis 11,389-93.
Central Research Institute necessary (224).
Germany, post-war example, agriculturally (223-4), 11,393, 11,681.

PAUL, K. T., O.B.E., B.A.—*contd.*

ADMINISTRATION—*contd.*

Panchayat, Village, Act, 1920 (219), 11,302-3, 11,451-62, 11,474, 11,615-8.
Roads, village, unsatisfactory 11,595-605.
———, finance 11,606-11.

AGRICULTURAL INDEBTEDNESS:

Causes of (224-5), 11,521-5.
Legislation as to 11,394-8.
Panchayats should administer law as to (225).
Source of credit, the usurer (224).
Usurious Loans Act 11,526-8.

AGRICULTURAL INDUSTRIES:

Experiments 11,493-7.
Market must be available (227-8), 11,529-39.
Staple crops, should be related to (227).
Weaving and spinning (223), 11,636-9.
Woollen twist making as an instance (228).

AGRICULTURAL LABOUR:

School children 11,542-4.

ANIMAL HUSBANDRY:

Bulls should be provided at weekly markets (227).
Silo should be adopted (227).

CO-OPERATION:

Caste difficulties 11,548-50.
Cattle insurance and silo societies, necessity for (228).
Co-operative movement 11,463-72.
Facile credit, danger of 11,399.
Non-credit societies (228), 11,472.
Panchayats, comparison with co-operative societies 11,555-66, 11,615-8.
Self-management, progress towards 11,545-54.
Selling societies 11,382-5.

DEMONSTRATION AND PROPAGANDA:

Education, should be regarded as a process of (222).
Farmer-demonstrators (223).
Farmer's own land, demonstration should be carried out on (223).
Implements (227).
Markets should be used for (222), 11,379-81.
Pamphlets, degree of usefulness of, in view of illiteracy (223), 11,386-8.
Seed distribution 11,483-4, 11,633-5.
Silo 11,400-13, (228).

EDUCATION:

Adult 11,420-33, 11,487-92.
After-careers of students of agricultural colleges 11,447-8.
Attraction of educated youths to agriculture depends upon whether profitable (220).
Bias, agricultural, should be given to all education (219).
Books 11,434-5.
Commission on Village Education in India (220).
Communications, improvement in required 11,598-601.
Compulsory, local option desirable 11,378.
—————, should be elastic 11,543-4.
Demand for, active but indefinite 11,372-7, 11,444-6.
Female 11,304-7, women do not attend adult schools 11,491-2.
History of 11,304-23.
Land cess 11,572-82.
Land revenue, earmarking of 11,679-80.

PAUL, K. T., O.B.E., B.A.—*contd.*

EDUCATION—*contd.*

Leakage of boys after first class 11,540-2.
Literacy not of first importance 11,324-33.
————————, Dr. Mason Olcott's opinion 11,420-33.
————————, an example 11,473, 11,518-20, 11,665-71.
Middle schools, agricultural, should be in every district (220).
————————, should be staffed by graduates of Provincial agricultural college (220), 11,652-3, 11,502-5.
————————, demand for 11,588-93.
Moga (220), 11,361-9, 11,498-11,501, 11,506-17.
Organisation of agricultural education in the Province (220).
Panchayats, statutory registration of (219), 11,302-3, 11,567-71.
Primary, should be re-modelled (219-220).
————, should be financed in preference to higher education (221-2), 11,485-6, 11,573-87, 11,646-80.
————, should be vernacular and self-supporting (221), 11,334-60, 11,439-43, 11,572, 11,658-80.
Sadler Commission report (221).
Teachers, fees 11,673-5.
————, training school for 11,594.
————, should be farmers (220 & 228), 11,370-2, 11,654-7.

IMPLEMENTS:

Propaganda necessary (227).

IRRIGATION:

Experimental borings necessary (226).
Famine protection, standard of (225).
Salem District, necessity for irrigation in (225-6), 11,414-6, 11,628-30.
Wells, economic value of 11,619-26, 11,641-2.

MARKETING:

Communications unsatisfactory 11,595-7.

RESEARCH:

Appreciation of necessity for, not sufficient (219), 11,300-1, 11,661-4.
Soils, importance of, as to (219).
Well boring (226).

WELFARE OF RURAL POPULATION:

Communications, unsatisfactory, affecting marketing, education, medical relief 11,595-11,611.
Congestion in villages, 11,614.
General lines, work should be along (229).
————————, regarding rural problem as a unit 11,295-6, 11,643-5.
Non-official work helped by officials (229), 11,296-7, 11,436-8, 11,479-84.
Sanitation, village 11,612-3.
University students, ignorance of social conditions 11,475-8.
Young Men's Christian Association, work of 11,299, 11,416-9, 11,449-50, 11,532-9, 11,566.

PEBRINE DISEASE OF SILKWORMS (*Rao*) 9111-3.

PINTO. (*See under* **BAZL-UL-LAH.**)

PUBLIC HEALTH. (*See under* **WELFARE.**)

RAILWAYS. (*See under* **ADMINISTRATION.**)

RAMDAS, V., and SIVASWAMI, K. G., representing the Madras Provincial Co-operative Union.

ADMINISTRATION:

Departments connected with agriculture, co-operation and labour should be reorganised (676-7, 680), 16,564-6.
Panchayats, minor irrigation works should be handed over to (680).

RAMDAS, V., and SIVASWAMI, K. G.—*contd.*

AGRICULTURAL INDEBTEDNESS:

Causes of: mainly uneconomic nature of holdings and lack of subsidiary occupations (673).
Extent of: two-thirds of pattadars in dry tracts and one-half in wet tracts are indebted, their mortgage debts alone amounting to half the value of the land held by them (673).
Interest, rates of (673).
Land revenue in Tanjore, a cause of indebtedness (673).
————, incidence of 16,603-10.
Rainfall, insufficiency of a cause of indebtedness (673), 16,611-5.

AGRICULTURAL LABOUR:

Labour Officers should be transferred to proposed Development Department (678), 16,732-3.

AGRICULTURAL CAPITAL:

Liquid capital available for investment 16,576-89.

CO-OPERATION:

All-India organisation advisable 16,561-3.
Backward classes, societies for, should have special contribution from Government, as recommended by Maclagan Committee (678).
Banks, central and provincial, existing, could undertake mortgage banking (674), 16,710-6.
Bombay Provincial Co-operative Bank successful in its sale shops (678).
Bombay Provincial Co-operative Union, Government help 16,691-5.
————, educated men helping 16,696-704.
Broadening of constitution of central co-operative societies to enable educated classes to come in (680), 16,567-73, 16,620-1, 16,653-60, 16,744-64.
Central banks rendering good service 16,511-8.
Central control and assistance required (677-8).
Consolidation of holdings (679).
Co-operation, the one and only method for development of the agricultural industry (679).
Firewood, supply of (679).
Government loans to co-operative societies at low rates of interest for plant, machinery and godowns (678).
Indigenous system of banking is moneylending by sowkars 16,544-51.
Labour unions, irrigation works should be handed over to (677).
————, village improvement work 16,730-3.
Land lease societies require expert paid secretaries (679).
Land mortgage banks (674).
————, do not command confidence in the market, borrowing limit too low, rates of interest 16,535-43.
————, Government should guarantee payment of interest and so encourage investment 16,574-84.
————, security 16,590-3.
————, Government should finance, 16,616-7.
————, inspection 16,618-9.
————, have completely failed 16,668-72, 16,709.
Legal coercion of the unwilling inadvisable in co-operative enterprise (679).
Legislation required to restrict re-mortgaging of lands already mortgaged to co-operative societies (680).
Local unions, may perform functions of development association, inherent weakness of and absence of any defined relationship to agricultural officers (676), 16,676-85.

RAMDAS, V., and SIVASWAMI, K.G.—*contd.*

CO-OPERATION—*contd.*

Madras Central Urban Bank Limited 16,519-21.
———, administration 16,635-9.
———, Registrar of Co-operative Societies merely gives advice 16,640-2.
———, borrowing at 4 per cent. and paying dividend limited to 9 per cent. 16,643-5.
———, balance sheet 16,646-8.
———, clearing bank 16,649-52.
———, could float debentures for land mortgage banks 16,672-5.
Madras Provincial Co-operative Union, constitution of 16,492-510.
———, borrowing and lending rates of interest 16,519-32.
———, rate of interest has not much effect on borrowing 16,532-4.
———, funds 16,557-60, 16,594-602, 16,622-5.
———, propaganda 16,626-34.
———, meetings 16,688-90.
———, training classes 16,705-8.
Management, expert, required, University and College of Commerce should teach crop finance, trade banking and accounts (678).
Propaganda and demonstration (678).
———, fuller use should be made of co-operative movement 16,552-6, 16,626-34, 16,661-7, 16,734-5.
Sale societies, Shiyali liquidated, Tindivanam working at a loss, Kallakkurichi making a bare profit 16,721-9.
Taluka Development Associations 16,736-43.
Touch between Agricultural and Co-operative Departments not sufficiently sympathetic 16,555.
Trading unions have failed for want of necessary stimulus from the centre (678).
Triplicane stores a success (678).
Voluntary agencies, importance of (679).

DEMONSTRATION AND PROPAGANDA:

Co-operative movement, fuller use might be made of 16,555.
Local co-operative unions should carry on (676).
Sections of Agricultural and Industrial Departments popularising improvements and small industries should be amalgamated with Co-operative Department (676-7); Department so re-organised should develop co-operative marketing (677).

EDUCATION:

Adult education through non-official agencies (675-6).
High schools, rural, curriculum should have rural bias (680).
Voluntary agencies, help of required (674-6).

FERTILISERS:

Export of bone and fish manures and oilcakes should be discouraged (678).

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RAMDAS, V., and SIVASWAMI, K. G.—*contd.*

FINANCE:

Capital, liquid, available for investment 16,576-84.
Legislation totally prohibiting mortgage or sale of land inadvisable, but there should be restrictions on cultivators who are borrowing from co-operative societies (674).
Long term loans: land mortgage banks under central and provincial banks giving loans up to 40 years at interest of 7 per cent. (674); should lend for liquidating prior indebtedness and for productive improvements of land (674), 16,710-6.
Taccavi should be issued through co-operative banks (674).

HOLDINGS:

Consolidation, legislation altering law of succession impracticable (679).

IRRIGATION:

Co-operative labour unions, irrigation contract works should be handed over to (677).
Crop insurance, private enterprise will not undertake (677).
Delay in repair of works (677).
Panchayats, under Irrigation Bill (677).
————, minor irrigation works should be handed over to (680).
Well sinking, Government should do boring free of cost (677).
————, societies should be formed (677).

WELFARE OF RURAL POPULATION:

Drink, alcoholic, seriousness of (679-680).
Voluntary workers 16,655-7, 16,717-20.

RAO, Mr. N. RAMA, Superintendent, Sericultural Department, Mysore Government.

AGRICULTURAL INDUSTRIES:

Sericulture in Mysore, breeding silkworms (10), 9222-33.
————, caste restrictions 9153-5, 9206-11, 9261-6.
————, co-operation (8-9).
————, demonstration (7-8).
————, economic advantages of (2).
————, education (5).
————, expansion (5-6), 9196-9205, 9234-40.
————, exports (6).
————, extent of distribution of industry, area under mulberry about 50,000 acres, value of silk produced ove a crore of rupees, supports 100,000 families (1), 9040-7, 9068-85.
————, filature, village and domestic reeling (9).
————, history of (2) *et seq.*
————, organisation, of the department (4).
————, of the industry (10).
————, population, sericulture depends upon density of 9120-4.
————, seed (6 and 7), distributed by Government Department 9091-5.
————, smallholders carry on sericulture 9156-9.
————, State action (3).
————, subsidiary to agriculture generally, but in places the main industry (2), 9151-2.
————, worm, characteristics of (2), 9048-9.

CO-OPERATION:

Sericulture in Mysore, special type of society (8).
————, short-term credit required, 45 days 9024-36, 9160-76 (29).
————, Taluk Association (10).
————, weavers' societies 9182-6.

RAO, Mr. N. RAMA—*contd.*

CROPS:

Mulberry 9049-52.
———, compared with groundnut 9098-9101.
———, compared with castor 9106-9110.
———, in competition with food crops 9117-9, 9125-8.

DEMONSTRATION AND PROPAGANDA:

Sericulture in Mysore, classification of work (3).
———, history of (3).
———, organisation of the department (4).
———, progress (7-8).

EDUCATION:

Sericulture in Mysore, teaching of in middle schools 9142-50.
———, summary of work (5).

FINANCE:

Sericulture in Mysore, Government loans, long and short term (8).
———, mulberry requires long-term credit 9053-6.

MARKETING:

Cocoons 9177-81.
Profits, division of 9235-8.
Silk, artificial, competition of, with real silk 9057-65, 9114-6.
Pebrine disease of silkworm 9111-3.

RESEARCH:

Sericulture in Mysore, breeding of silkworms (10), 9130-6.
———, filature, village and domestic reeling (9).

TARIFFS:

Protection for Mysore silk (11 and 12).
———, 25 per cent. *ad valorem* import duty required 9212-21.

REDDI, Sir K. V., Nayadu, B.A., M.L.C., Madras.

ADMINISTRATION:

Agricultural Department, work of, should be extended 12,697-704.
———, amount spent very small as compared with other countries (381), 12,765-70, 12,863-5, 13,095-103.

AGRICULTURAL INDEBTEDNESS:

Alienation of land, no restrictions on 13,090-4.
Causes of (346).
Control of credit of cultivators inadvisable (346), 13,055-61.
Co-operative credit societies have given immense relief to ryots (346).
Drink, cause of (346), 12,806-28, 13,055-61.
Federal Farms Loans Act of America (346).
Land Mortgage Banks required (346), 13,033-5.
———, but cannot be organised under present system 13,061-5.
———, legislation required 13,066-8.
———, nature of mortgages 13,069-76.
Moneylenders, obtaining possession of land 12,733-6.
———, not known whether increasing in number 13,052-4.
———, moneylending landlords 13,084-7.
Usurious Loans Act has not been applied 13,088-89.

AGRICULTURAL INDUSTRIES:

Coconut fibre, use of (350).
Coconut oil factory, room for, in Godavari District (350).
———, Government help necessary 12,757-8.
———, started by Tata Company 12,759-61.

REDDI, Sir K. V., Nayadu, B.A., M.L.C.—*contd.*

AGRICULTURAL INDUSTRIES—*contd.*

Cultivator, average, only works 120 days in the year, wastes the rest of his time (349-50).
Dairying (350).
Government justified in spending public funds on popularising part-time occupations for agriculturists 12,752-6.
Industrial concerns should move to rural areas (350).
Oil pressing (350).
Poultry, not reared on extensive scale (350).
Ropes, baskets and mats (350).
Sericulture (350).

AGRICULTURAL LABOUR:

Emigration by low-caste people, improving their economic position 12,829-36.
———, Ceylon, doubtful conditions, 12,837-9.
———, indentured labour stopped 12,840-7.
Wages 12,804-5.

ATTRACTING CAPITAL:

Land banks should be established 13,080-2.

CO-OPERATION:

Administration of agricultural co-operative societies satisfactory 13,038.
Credit societies have given immense relief to ryots (346).
Land mortgage banks required (346), 13,033-5.
Non-credit societies should be developed 13,039-41.

CULTIVATION:

Paddy, comparative yields in India, Spain and America 12,767-70.
———, 4 to 5 acres can be cultivated by one man 12,962-6.
———, transplanting, etc. 12,967-77.
Green manure 12,971-3.

DEMONSTRATION AND PROPAGANDA:

Agricultural Department, work of should be extended 12,697-704.
———, amount spent very small as compared with other countries (381), 12,765-70.
Demonstration farm, private 12,990-5.
Demonstrators 12,996-13,004.
Pamphlets 12,976-7.

EDUCATION:

Agricultural classes, teachers and pupils in agricultural schools should be drawn from (345), 12,722-6.
———, definition of, 12,884-7.
———, education should be run on a class basis 13,007-12.
Attracting middle class youths to agriculture impossible under present general system of agriculture (345), 12,721-2, 12,848-62, 13,013-4.
———, settling them on culturable waste land 13,017-21.
Compulsion advisable until age of 16 (346), 13,022-4, 13,104-8.
Coimbatore Agricultural College, affiliated to Madras University (345).
Government service, the sole incentive of students at the Agricultural College (345), 12,726.
———, economic reasons 12,890-6.
———, reasons of prestige 12,897, 12,952-5.
High schools, none (345).
Rural economics, study of, would not serve any purpose 12,779-89, 12,936-40.
Samalkot, Agricultural College should be established at 12,941-5, 13,015-6.
System of general education unsuitable (346), 12,898-913, 13,104-8.

REDDI, Sir K. V., Nayadu, B.A., M.L.C.—*contd.*

EDUCATION—*contd.*

Tamil agricultural school, demands for (345).
Unemployment among educated middle class (345-6).
University education has been overdone (353).

FERTILISERS:

Adulteration, rare (349), 12,750-1.
Cowdung, can only be had in small quantities (349).
———, use of as fuel can only be prevented by provision of cheap firewood (349).
Demonstration of better results necessary (349).
Export of, causes increase in price and should be prohibited (349).
Green manure, can only be had in small quantities (349).
Natural manure, not sufficient quantities (349).
Pati earth (old village soil) exhausted (349).
Prices should be reduced (349).
Railway transport concessions (349).

FINANCE:

Alienation of land, no restriction on 13,090-4.
Co-operative credit societies have given immense relief to ryots (346).
Federal Farms Loans Act of America (346), 12,934-5, 13,036-7.
Land mortgage banks required (346), 13,033-5.
———, but cannot be organised under present system 13,061-5.
———, legislation required 13,066-8.
Moneylenders, obtaining possession of land 12,733-6.
———, not known whether increasing in number 13,052-4.
———, moneylending landlords 13,084-7.
Mortgages always redeemable (346), 12,914-5, 13,069-76.
Taccavi, unsatisfactory administration of 12,729-32, 13,082-3.
———, should be transferred to a Minister 13,080-1.
Usurious Loans Act has not been applied 13,088-9.

HOLDINGS:

Fragmentation, disadvantage of not so bad as it is believed to be 12,747.
———, effect of population 12,740-9.
———, statistics, none as to 13,116-7.

IRRIGATION:

Finance, the first obstacle to extension of (347) 12,866-84.
Godavari District, one of the best systems in India, but should be extended (347), 12,956-61.
Interest of 10 per cent. is being realised on 830 lakhs (348), 13,047-51.
Kistna reservoir project, considered remunerative (347).
Mettur project to cost 6 crores and irrigate 3 lakhs of acres (347).
———, a productive scheme 12,866-77.
Productive works, policy as to, wrong (348), 12,916-25.
———, increased general revenue caused by should be taken into consideration 13,109-15.
Protective works (348).
Tanks and ponds, no question of extending but should be improved (347).
Thungabadra project to command 35 lakhs of acres of famine country (347).
Wastage of canal water by evaporation or absorption in soil (349).
Wells, Industries Department has undertaken boring and assisting ryots (347).
———, large scope for extension of (347).

RESEARCH:

Agricultural Department, work of should be extended 12,697-704.

REDDI, Sir K. V., Nayadu, B.A., M.L.C.—*contd.*

STATISTICS:

Census of cattle carelessly done, use of, as legal evidence, has caused immense mischief (351), 12,762-4.
Crop estimates of paddy and cotton fairly correct (350-1).
Economic factors, cost of production, etc., none as to 13,118-24.
Fragmentation, none as to 13,116-24.
Not always reliable 13,122-4.
Prices, should be compiled by one Department (351).
Rail-borne trade returns were of some value (351).
Rural reconstruction should be undertaken by Government and not left to unofficial agencies 13,125-30.
Survey reports should be compulsory (350).
Zamindari lands, statistics only available in surveyed areas (350).

WELFARE OF RURAL POPULATION:

Bombay compared with Madras 12,795-805.
Co-operative society, supply information as to economic position of their members (350).
Drink, alcoholic, has spread among lower classes (346), 12,806-28.
————, Excise Administration Report shows a decrease 13,025-8.
————, prohibition experiments 13,029-32.
Drinking water supply often insufficient and contaminated (350).
Educated men taking interest in rural affairs 12,783-94.
Public spirit, lack of 12,984-9.
Reforms of 1919 have not affected agricultural outlook 12,774-8.
Rural economics, study of, would not serve any purpose 12,779-82.
Rural reconstruction should be undertaken by Government and not left to unofficial agencies 13,125-30.
Standard of living 12,771-3.
————, desire by educated persons for higher standard 12,927-31.
————, influence of war service 12,932-3.
Survey, economic, should not be undertaken for a decade (350).
Village, average, has no club, recreation ground, hospital, road, post office or public library (350).

RESEARCH. (*See* **ANSTEAD**).

Administrative work should not be done by scientific experts (*Sivan*) (152), 10,735.
Agricultural Department: work of should be extended (*Reddi*) 12,697-704.
————, interest in by large landholders (*MacMichael*) 12,085-9.
Agricultural engineering, not very successful (*R. Mudaliar*) (698).
Appreciation of necessity for, not sufficient (*Paul*) (219), 11,300-1, 11,661-4.
Beekeeping (*Sutherland*) (402).
Central Research Bureau under Government of India to deal with crops common to all Provinces (*Subbarayan*) (536).
Central institute should be strengthened (*Munro*) (255).
Coffee, more difficult to obtain results than with regard to rubber and tea (*Munro*) (255), 11,763.
Continuity, greater, required in field experiments (*Sivan*) (151), 10,868-71.
Co-ordination, more, necessary within the Province, between Provinces and between Deputy Directors and experts (*Sivan*) (151).
————, central co-ordinating body (*Sivan*) 10,736-55, 10,837-8, 10,867, 10,912-3.
Cotton, improved e.g. Cambodia, should be introduced (*Subbarayan*) (536).
————, more could be done (*Subbarayan*) 14,864-5.
Dry farming requires study (*Sivan*) (154), 10,762-5.
Duplication of, necessary (*Sivan*) 10,726-36, 10,872-4.
Facilities for, sufficient (*Sivan*) (154).
Fertilisers (*Munro*) (256).
Forests (*Tireman*) 11,157-61, 11,189, 11,284.

RESEARCH—*contd.*

Foreign experts should not be employed (*R. Mudaliar*) (698), 16,835-9, 16,882-93.
Fruit culture and millets, none in, except ragi and cholam (*Narasimharaju*) (569).
———, considerable scope for fruit culture and preserving (*Narasimharaju*) 15,286-94.
Funds should be provided out of land revenue (*R. Mudaliar*) (698), 16,840-2, 16,943-6.
Government of India should control (*S. Mudaliar*) (424).
———, and pay for (*S. Mudaliar*) 13,686-9.
Groundnut and jute, research work done in the Department not appreciable (*Narasimharaju*) (569).
Implements, agricultural, none have been designed superior to indigenous tools (*R. Mudaliar*) (698) 16,847-58.
Importance of (*Kollengode*) (188), 10,915-9.
Indians, research should be done by: if necessary Indians should be sent abroad for training (*R. Mudaliar*) (698).
———, may be sent abroad for training (*S. Mudaliar*) (424).
Indigenous methods should be investigated (*R. Mudaliar*) (698), 16,768-72 (*Kollengode*) (188), (*Subbarayan*) (536).
Irrigation and conservation of soil moisture should receive first attention (*Sivan*) 10,793-6, (*Kollengode*) (188).
Jowar, drought-resisting varieties, no work has been done to develop (*R. Mudaliar*) (698).
Lift irrigation should be investigated (*Subbarayan*) (536).
Linguistic areas, selection of Indians with reference to (*S, Mudaliar*) (424).
Millet specialist, experiments of, not encouraging (*R. Mudaliar*) (698), 16,773-5, 16,894-7.
Phosphates (*Sivan*) 10,879-90.
Post-graduate study in each Province (*Sivan*) (152-3), 10,757.
Private research, not much (*R. Mudaliar*) 16,843-62.
Proverbs (*Sivan*) (153).
Province should be divided into areas for research work (*R. Mudaliar*) (698), 16,824-30.
Provincial Governments may demonstrate results (*S. Mudaliar*) (424).
Provincial research for crops special to each Province (*Subbarayan*) (536).
Provincial, must be (*Sivan*) 10,724-7, 10,872-4.
Records of past work should be codified (*Sivan*) (153).
Red soil cultivation, insufficient attention has been paid to improvement of (*Sivan*) (698).
Results, considerable (*MacMichael*) 11,787-93.
———, effect upon Government Revenue (*MacMichael*) 11,794-801.
Retired officers, facilities should be provided for work by (*Sivan*) (183).
Rubber, visits to Ceylon, Malaya and Java (*Munro*) (255).
Science, pure, graduates taken for research in preference to agricultural graduates (*Sivan*) (153), 10,758-62, 10,804-14, 10,830-6.
Sericulture in Mysore (*Rao*) Breeding of silkworms (10), 9130-6.
———, filature, village and domestic reeling (*Rao*) (9).
Soils (*Paul*) (219), (*Kollengode*) (188).
Staff (*Paul*) (219), (*Kollengode*) (188).
Staff, division of, between routine and research (*Sivan*) (152), 10,756, training of (152).
Stipends for post-graduate work (*Sivan*) 10,815-20.
Study leave in foreign countries, facilities for should be increased (*Sivan*) (151-2).
Superphosphates (*S. Mudaliar*) 13,810-21.
Tea Association Experimental Station at Tocklai (*Munro*) (255), 11,755-69.
Teaching and research should be in separate sections (*Sivan*) (157), 10,823-9.
Team work necessary (*Sivan*) 10,721-3.
Theosophical Educational Trust, work of (*R. Mudaliar*) 16,877-93.
United Planters' Association of Southern India, Area of operations (*Munro*) 11,770-6.
———, Crop organisation of (*Munro*) 11,711-2.

RESEARCH—*contd.*

United Planters' Association of Southern India, Finance (*Munro*) (255), 11,691-4, 11,703-8, 11,745-7, 11,777-84.

————————, touch with Agricultural Department (*Munro*) 11,709-10.

————————, touch with Indian Tea Association (*Munro*) 11,695-702.

Vernaculars, publications should be in (*S. Mudaliar*) (424), 13,739-43.

Veterinary, classification of diseases (*Aitchison*) 13,349-53.

————, examples of work done (*Aitchison*) 13,302-9.

————, facilities, further, desirable (*Aitchison*) (383).

————, feeding (*Aitchison*) 13,236-7.

————, indigenous medicines (*Aitchison*) 13,313-4, 13,325-9.

————, Muktesar wrongly controlled (*Aitchison*) (382).

————————, Directors of should have administrative work only (*Aitchison*) (382).

————————, staff should be free from routine work (*Aitchison*) (383), 13,169-73.

Well boring (*Paul*) (226).

ROADS (*See under* **ADMINISTRATION**).

RUSSELL, Major A. J. H., C.B.E., M.D., D.P.H., I.M.S., Director of Public Health, Madras.

EDUCATION:

Health, first aid 14,420-2.

———, hygiene should be a compulsory school subject (490), 14,211-20.

————————, not a difficult subject to teach 14,378-88

———, instruction by dramas 14,325-7.

———, latrines in schools (490), 14,221-9.

———, leaflets, vernacular 14,328-9.

————————, not collected in book form 14,412-3.

———, medical colleges and schools, in, preventive aspects should be emphasised (490).

————————, affiliated to universities 14,230-3.

———, personal hygiene (486-7).

———, propaganda work in villages (477-8).

———, teachers (478).

————————, instructions to 14,216, 14,382-4.

———, text books, vernacular 14,213-7.

———, training, Calcutta School of Tropical Medicine (1,487-8).

———, villages, educated persons should return to, and devote their attention to agriculture (479).

———, voluntary workers, not fair that burden should fall on, increased funds required (478), 14,335.

FERTILISERS:

Night soil (480).

————, sale of 14,466-71.

Public Health. (*See* WELFARE).

STATISTICS:

Vital 14,452.

WELFARE OF RURAL POPULATION:

Absentee landlordism (479-80).

Child welfare, *see* Maternity and Child welfare.

Cholera (474).

———, in 1924 and 1925 96,000 deaths (477).

———, protected water supply, relation to 14,303-7.

———, periodicity of 14,457-61.

Conditions, deplorable in average village (480).

Deaths from diseases (473).

RUSSELL, Major A. J. H., C.B.E., M.D., D.P.H., I.M.S.—*contd.*

WELFARE OF RURAL POPULATION—*contd.*

Decentralisation, disadvantages of, too great (484-5).
Education, *see* "Health" under "EDUCATION."
Expectation of life, figures (473), 14,255-6.
Fairs and festivals, sanitary control of (477).
————————, tax on pilgrims to pay cost of 14,455.
Fever, relapsing in 1922-3 (477).
First aid, training in 14,420-2.
Health officers, annual reports submitted by (477).
————, duties of, knowledge of vernaculars necessary 14,414-9
Hookworm, 80 to 100 per cent. in wet districts affected (474).
————, International Health Board's campaign (483).
————, on tea and coffee plantations 14,257-8.
————, provision of latrines 14,259-74.
Housing, bad (480).
————, improvement of 14,339-40.
————, constructing on piles 14,341-2.
————, model villages 14,343.
————, bad effect of keeping animals in dwelling houses 14,483-4.
International Health Board of the Rockefeller Foundation hookworm campaign (483).
————————, invitation from Madras Government, 14,370-4.
Intestinal disease, necessity for investigation of (491).
Latrines, importance of, Mr. Foulkes' offer, selection of test villages (483-4).
————, in schools (490).
————, relation to disease 14,259-74.
————, types of 14,463-71.
————, sewage disposal 14,485-6.
Madras Health Council (478).
Malaria, seriousness of, no sufficient preventive measures (474-5).
————, the most serious disease 14,344-6.
————, problem practically untouched (485-6), 14,281-6.
————, all-India scheme 14,344-50, 14,367. (*See* Quinine.)
Maternity and child welfare, general health conditions, improvement of, necessary (486).
————————, infantile mortality rates (472).
————————, Madras Presidency Maternity Relief and Child Welfare Association (480).
————————, maternity deaths largely due to inefficient midwives (474).
————————, National Health and Baby Week celebrations (477).
————————, ————, success of (479).
————————, nurses and midwives, registration Bill (480), 14,368-9.
————————, ————————, training 14,410-1.
————————, practically nothing done in rural areas (480).
————————, registration of births and deaths (477).
————————, school children, medical inspection of (478).
————————, teachers, education of (478).
Medical practitioners, subsidies to, in rural areas (480), 14,336-8.
Milk, safe supplies should be assured (486).
——, Adulteration of Food Act, 1918, penalties inadequate 14,355-8.
National Health and Baby Week celebrations (477).
————————, success of (479).
Night soil, hygienic benefits of use of, as a manure (480).
————, sale of 14,466-71.
Nutrition, Cause of mal-nutrition, poverty or ignorance 14,432-51.
————, Deficient, causes beriberi, keratomalacia, intestinal disease, malaria, leprosy, infantile mortality (490-1).

RUSSELL, Major A. J. H., C.B.E., M.D., D.P.H., I.M.S.—*contd.*

WELFARE OF RURAL POPULATION—*contd.*

Nutrition Institute, required (491).
———, McCarrison, Colonel, work of 14,234-5.
———, not aware of any other work than Colonel McCarrison's in the Presidency 14,431.
———, population, pressure of 14,236-54.
———, Malthusian theory 14,397-407.
———, benefit of increased production owing to irrigation does not go to the cultivator 14,440-1.
———, Starvation during convalescence from disease (480).
———, Teeth, diseases of, caused by calcium deficiency 14,333-4.
Panchayats, hopeful 14,351-4.
———, lack of funds, subsidies impossible 14,472-6.
Population of Madras Presidency, 42·5 millions of whom 93 per cent. mainly dependent upon agriculture (472).
———, pressure of 14,236-40.
———, effect of emigration 14,241-4.
———, birthrate 14,241-54.
———, economic effect of irrigation causes increased birthrate 14,247-54.
———, Malthus 14,397-407.
———, birth control 14,456-60.
Prevention of disease rather than cure 14,392-6, 14,428-30.
Primitive health measures necessary (483).
Problem must be dealt with as a whole (482).
Propaganda, importance of 14,328-32, 14,412-3.
Public Health, Act required (485), 14,354.
———, Administration, no co-ordinated system before 1922-3 (475).
———, disadvantages of too great decentralisation (484-5).
———, Department should have power to compel local bodies to take reasonable precautions (485), 14,375-7.
———, proper organisation required in the districts (488).
———, laboratories required (491).
———, by-laws a dead letter (485).
———, institute, museum and laboratory required 14,462.
———, progress slow (476).
———, Memorandum on the future development of the Public Health Service (481-9).
———, scheme in every district in 1923 (476).
———, success of, but requires development (481), 14,292-302.
———, cost 14,408-9.
Public opinion 14,363-6.
Quinine (*see* Malaria) Price exorbitant (474), 14,287-9, 14,454.
———, world shortage 14,477-80.
———, Government cinchona factory, profit of Rs.3.28 lakhs 14,481-2.
Rabies, Pasteur Institute, Coonoor 14,423-4.
Reports, annual, submitted by health officers 477.
Research, fundamental, All-India 14,344-50.
Sanitation, bad state of cause of dysentery and diarrhœa (474).
———, in the real sense of the term does not exist in rural areas (481).
———, programme of rural sanitation required (481), (488-9).
Smallpox, chiefly due to ignorance and superstition (474).
———, lack of uniformity in measures for control of (485).
———, vaccination compulsory in certain areas 14,275-80.
———, in 1924 two million persons successfully vaccinated (477).
———, causes most blindness 14,361.
———, surveys by research workers 14,425.
Teeth, diseases of, very common among children 14,333-4.
Tuberculosis, great increase of, largely due to ignorance and bad housing conditions (475), 14,290-1.
———, measures for prevention of (486).

RUSSELL, Major A. J. H., C.B.E., M.D., D.P.H., I.M.S.—*contd.*

WELFARE OF RURAL POPULATION—*contd.*

Vaccination (*see* Smallpox).
Venereal disease, common but not very serious 14,359-62.
Water, drinking supply, cholera, relation to 14,303-7.
———, famine of water in Ceded Districts in 1922 14,453.
———, improvement of (477 & 482).
———, pollution of (474).
———, contamination of tanks and wells general (480).
———, scheme for supply of 14,319-24.
———, wells, bucket attached to, for drawing water 14,308-9.
—————, construction of and distribution of water 14,310-7.
—————, step- 14,307.
—————, tube 14,426-7.
Windmills for pumping water 14,318-9.

SALT, PRICE OF: (*Subbarayan*) 15,177-81.

SIVAN, M. R. Ry. Rao Sahib M. R. Ramaswami, B.A., D.I.P., A.G.R.I., I.A.S., Government Lecturing Chemist, Agricultural College, Coimbatore.

ADMINISTRATION:

Board of Agriculture, the present, has outlived its usefulness, Central Board of Agriculture would be unwieldy (161).
Co-ordination of experts, scheme for 161-3.
Village, organisation of as a unit has broken down 10,877-8.

ATTRACTING CAPITAL:

Improvement of land, factors tending to discourage (166-7).
Land regarded as a safe investment (166).

CO-OPERATION:

Lalgudi Co-operative Agricultural Society's farm (164-5), 10,777-82.
Shiyali Agricultural-Industrial Manure Society, failure of due to lack of business methods (165).

CROPS AND CROP PROTECTION:

Food crops preferable to money crops 10,801-3.

CULTIVATION:

Ploughing 10,797-10,800.

DEMONSTRATION AND PROPAGANDA:

Advertisement required (160), 10,769.
Agricultural Department, instances of work (160-1).
Commercial 10,910-11.
Cultivators willing to take advice (159).
—————, should be encouraged to visit agricultural stations (160).
Demonstrators should concentrate, travelling allowance should be increased, numbers of should be increased (159).
Local advisory boards should be established (159-160).
——————————, agricultural associations are official-ridden, co-operative societies and panchayats 10,860-5.
Manures 10,901-5.
Personality of officers, importance of (159).
Zamindari areas, more attention should be paid to (160).

EDUCATION:

Adult (158).
——, supply should anticipate demand 10,853-9.
Bias, agricultural, in universities (155-6).
Coimbatore Agricultural College (154).
——————————————, Chemist, Lecturing, appointment of 10,910.
——————————————, Dairying, teaching of should be improved (156).

SIVAN, M. R. R.—*contd.*

EDUCATION—*contd.*

Coimbatore Agricultural College, Economics, agricultural, should be taught more thoroughly (155).
———, Degree of Rural Economy should be established 10,766-8, 10,907-9.
———, honorary visitors for inspection (160).
———, incentive of students is to join Agricultural Service (156).
———, number of students should be increased (156).
———, practical farm training, students should be given (156-7).
———, Principal of, should be regular professor and not a technical expert, should have complete control of all teaching staff (155).
———, research and teaching should be in separate sections (157), 10,823-9.
———, teaching has not received so much attention as research (154-5).
———, ———, methods of 10,892-9.
———, transfers, periodical, of staff from teaching to research sections (155), 10,839-43.
Compulsion should be adopted (166), 10,784-9.
Defects of system of general education based on examinations (165).
Demand for, great (166), 10,783.
Post-graduate agricultural courses necessary (158).
Private farming, reasons why agricultural students have not taken to (158).
———, culturable waste land should be assigned to students by Government 10,844-52.
School farms necessary (158).
——— plots, poor organisation (158).
Teachers, class from which drawn (156); defective training and bad pay (165-6).

FERTILISERS:

Adulteration, legislation necessary to prevent (164).
Cowdung, use of as fuel decreasing (164).
Phosphates 10,884-91.

FINANCE:

Facilities, present, ineffectiveness of 10,866.
Short-term credit should be afforded on future crop (163), 10,770-4.
Taccavi rules, rigidity of should be re-considered (163), 10,906.

RESEARCH:

Administrative work should not be done by scientific experts (152), 10,735.
Continuity, greater, required in field experiments (151), 10,868-71.
Co-ordination, more, necessary within the Province, between Provinces and between Deputy Directors and experts (151).
———, central co-ordinating body 10,736-55, 10,837-8, 10,867, 10,912-3.
Dry farming requires study (154), 10,762-5.
Duplication of, necessary 10,726-36, 10,872-4.
Facilities for, sufficient (154).
Irrigation and conservation of soil moisture should receive first attention 10,793-6.
Phosphates 10,879-90.
Post-graduate study in each Province (152-3), 10,757.
Proverbs (153).
Provincial, must be 10,724-7, 10,872-4.
Records of past work should be codified (153).

SIVAN, M. R. R.—*contd.*

RESEARCH—*contd.*

Retired officers, facilities should be provided for work by (153).
Science, pure, graduates taken for research in preference to agricultural graduates (153), 10,758-62, 10,804-14, 10,830-6.
Staff, division of, between routine and research (152), 10,756.
——, training of (152).
Stipends for post-graduate work 10,815-20.
Study leave in foreign countries, facilities for should be increased (151-2).
Teaching and research should be in separate sections (157), 10,823-9.
Team work necessary 10,721-3.

SOILS:

Alkali land, reclamation of, not a serious problem (162).
Culturable waste land should be auctioned (164), 10,875-6.
Erosion (164).
Instances of improvement (164).
Minimum cropping value, most soils have reached (163).
Phosphate shortage general 10,775-6, 10,886-91.

SIVASWAMI: (*See under* **RAMDAS**).

SOILS:

Alkali land, reclamation of, not a serious problem (*Anstead*) 9561-3, (*Sivan*) (163).
Analyses of, for private persons (*Anstead*) 10,579-85.
Cropping, effect of (*Anstead*) 10,526-32.
Culturable waste land should be auctioned (*Sivan*) (164), 10,875-6.
Denudation of deforested areas not very important (*Anstead*) 9579-86.
Erosion (*Tireman*) (198-9), 11,067-85, 11,114-8, 11,225-33.
——, considerable work done on (*Munro*) (255-6), (*Sivan*) (164).
Instances of improvement (*Sivan*) (164).
Land Revenue assessment in relation to (*MacMichael*) 12,095-105.
Minimum cropping value, most soils have reached (*Sivan*) (163).
Phosphate shortage general (*Sivan*) 10,775-6, 10,886-91, (*Anstead*) 10,018-22.
Prickly pear, lands covered with, should be given to tenants assessment-free (*Subbarayan*) (540).
Research, more should be done (*Anstead*) 9577-8.
Survey (*Anstead*) 10,015-22, 10,637-44, (*MacMichael*) 12,100-1.
Uncultivated, poor, assigned to depressed class labourers (*Paddison*) (318), 12,349-71.
Waterlogging not serious (*Anstead*) 9560-3, 10,501-2.

STATISTICS:

Accounts, farm (*Anstead*) 10,454-6.
After careers of students (*Anstead*) 9375-6.
Agricultural indebtedness, no statistics as to (*Anstead*) 9464-73, (*MacMichael*) 12,048-53.
Agricultural stock, not very accurate (*MacMichael*) (269)
Census of cattle carelessly done; use of, as legal evidence has caused immense mischief (*Reddi*) (351), 12,762-4.
——, reports (*Paddison*) 12,546.
Crop estimates of paddy and cotton fairly correct (*Reddi*) (350-1).
Crop-cutting experiments necessary (*Anstead*) (61).
————, carried out by Revenue Department (*Anstead*) 10,450-3.
Cultivation and crop, are satisfactory (*MacMichael*) (269), 12,063.
Economic Enquiry Committee (*MacMichael*) (269).
Economic factors, cost of production, &c., none as to (*Reddi*) 13,118-24.
Economic position, general (*MacMichael*) 12,132-41.
Figures of areas under crops fairly accurate, except in permanently settled tracts and mixed crops (*Anstead*) (60).
Fragmentation of holdings, of, not collected (*Anstead*) 9531-6, (*Reddi*) 13,116-24.
Not always reliable (*Reddi*) 13,122-4.

STATISTICS—*contd.*

Pattas (*MacMichael*) (304).
Prices, should be compiled by one Department (*Reddi*) (351).
Provincial departments of statistics should be established (*Anstead*) (61), 9986-8.
Rail-borne inter-Provincial trade (*MacMichael*) 11,873.
————, trade returns as to crops should be restored (*Anstead*) (60), 9984-5.
————————, were of some value (*Reddi*) (351).
Ratio between occupiers and employes (*Paddison*) 12,623-7.
Reports of villages (*MacMichael*) 12,063-9.
Rural reconstruction should be undertaken by Government and not left to unofficial agencies (*Reddi*) 13,125-30.
Ryotwari, more reliable than as to zamindari tracts (*MacMichael*) 11,984.
Statistical section at Madras requires more staff (*Anstead*) (61).
Survey reports should be compulsory (*Reddi*) (350).
Vital (*Russell*) 14,452.
Wages, in kind, very difficult to assess (*Paddison*) 12,391-3.
———, Supplementals (*Paddison*) 12,502-14.
———, Census of wages (*Paddison*) 12,435-45.
———, insufficiency of staff prevents collection of data (*Paddison*) 12,539-48, 12,619-22.
Zamindari lands, statistics only available in surveyed areas (*Reddi*) (350).

SUBBARAYAN, Dr. P., M.L.C., zamindar of Kumaramangalam, Madras.

ADMINISTRATION:

Arbitration necessary (540) 15,064-6.
Central Research Bureau under Government of India to deal with crops in all Provinces (537-8).
Meetings of Provincial heads of departments with Agricultural Adviser with the Government of India (538).
Meteorological Department of no use to agriculturists (538).
Postal Department not much use to agriculturists (538).
Provincialism gradually growing (538).
—————, India's future with regard to 14,879-81.
Railways, existing, not enough for transport of agricultural produce (538).
Roads, rural population do not receive sufficient return for cess they pay, Road Board necessary (538).
———, have deteriorated since they were taken over by local authorities 15,280-1.
Staff, more needed (538).
Telegraph and wireless, not much use to agriculturists (538).

AGRICULTURAL INDEBTEDNESS:

Alienation of land, free right of should be taken from cultivators (539), 14,896-7.
Borrowing for uneconomic purposes should be made illegal 15,191-3.
Causes of borrowing, for marriages and feasts, seed, cattle and implements (539), 14,885.
————————, annual income of typical cultivator Rs.60, spends Rs.300 on marriage 14,887-93, 15,078-80, 15,230-52.
————————, productive and unproductive 15,060-1.
————————, marriages 15,091-9.
Extent of 14,999-15,002.
Interest, moneylenders' rate abnormally high, co-operative societies lending at lower rates (539).
————, rate should be controlled by legislation (539), 14,885-6, 14,894-5.
————, excessive rates 15,045-7.
Minors, property of, guardians should be permitted to borrow upon for improvements (540).
———, would be analogous to provisions of Settled Land Act in England 14,898.

SUBBARAYAN, Dr. P., M.L.C.—*contd.*

AGRICULTURAL INDEBTEDNESS—*contd.*

Moneylending, by landlords 15,045.
——, dishonest account-keeping 15,047-9.
——, security 15,056-9, 15,062-3.
——, shop account 15,057-8.
Usurious Loans Act 15,050-5.

AGRICULTURAL INDUSTRIES:

Basketmaking (542).
Beekeeping, not much scope for (542).
Carting (542).
Cotton ginning factories, cultivators obtain seasonal employment in (542).
Fruit growing, e.g., mango and banana, profitable (542).
Industrial Department should investigate (543).
Industries should not be moved to rural areas (542).
Oil pressing (542).
Pisciculture (542).
Poultry keeping, necessary to improve breeds (542).
Preparation of agricultural produce for consumption (542).
Salem, industries in 15,244-7.
Sericulture, not much scope for (542).
Spinning, hand, should be encouraged by Government (542), 15,015-23.
Work, cultivators work 9 months during the year (542).

AGRICULTURAL LABOUR:

Emigration to Ceylon and Malay States 15,003-7.
——, emigrants return with improved standard of life but have learned to drink arrack 15,155-63.
Free allotment of land to landless labourers (543).
Salem, in, no shortage of labour (543).

ANIMAL HUSBANDRY:

Bulls, Kangayam 14,972-6, 15,213-5.
——, work cattle, 14,978-9.
Cattlebreeding (541-2).
——, herd of the Pattagar of Palayakottai, very remunerative, discouraging influence of the Estates Land Act 14,899-904.
——, Kangayam and Ayrshire bulls, Sindhi cattle, dairying 15,138-54.
Cow, care of 14,976-7.
Dairying industry, great scope for (541).
Destruction of useless cattle necessary (542), 15,087-90.
Fodder scarcity, system to deal with, necessary (541).
——, in Salem (542).
——, dry 15,216-9.
Plough, improved, cannot be used because of smallness of draught animals 14,967-71.

ATTRACTING CAPITAL:

Agriculture must be made more profitable (544), 14,988-98.
Improvement of land, hindrances to, Estates Land Act, fragmentation of holdings, lack of credit facilities, lack of education (545).
——, banks will not give loans merely on land mortgage 14,922-6.
——, Estates Land Act, 1908, 14,983-8, 15,081-4.
——, provisions of 15,100-11.
——, permits increase of rent in respect of sinking of wells 15,273-7

SUBBARAYAN, Dr. P., M.L.C.—*contd.*

ATTRACTING CAPITAL—*contd.*

Profit from land 15,206-11.
Value of land in Tiruckengode 15,248-9.

CO-OPERATION:

Co-operative farming necessary to prevent sub-division of holdings (540), 14,912-5.
Credit societies, propaganda necessary to teach cultivator the advantages of (543).
———, being worked well but require too much supervision (543), 14,909-11.
———, lack of confidence in 14,905-8, 15,011-4, 15,074-7.
Distributive and productive societies, Government should try to develop (543).
———, difficult to manage 15,260-6.
Education by societies 15,067-73.
Government help, too much relied on (543).
Sale of produce or stock, no societies for (543).
Legislation not necessary to compel minorities to co-operate in joint Schemes for irrigation, fencing, consolidation, &c. (544).

CROPS:

Money crops, groundnut and cotton 15,024-8.

CULTIVATION:

Dry, depending on ploughing, improved plough cannot be used because of poor quality of cattle 14,964-71.
Productivity of the soil has increased owing to use of fertilisers 14,952-7.

DEMONSTRATION AND PROPAGANDA:

Demonstrators, more required (537).
———, do not come from and do not understand psychology of agricultural class 14,876-8, 14,958-61.
———, silage 14,962-3.
Farms, demonstration, not very successful (537).
Paddy cultivation, single seedling system, successfully demonstrated (537).
Plough, improved, demonstration of (537).

EDUCATION:

Adult education, a great want, night schools (537).
Attendance at agricultural schools satisfactory (536).
Compulsory education necessary (537), 14,874-5, 15,112-24.
———, for 4 years 15,220-3.
Extension of facilities for teaching agriculture not necessary till farmers have learned three R's (536).
Finance, Government should spend more on rural education (537).
———, education cess not applied to education 15,112-24.
———, comparative expenditure on primary and on secondary and university education 15,184-90.
Government service, agricultural students go into (536).
———, main incentive to students to study agriculture (536-7).
———, more profitable than cultivation 15,228-9.
Institutions and teachers, not sufficient for agricultural education (536).
Middle class youths should be attracted to agriculture by being given land by Government and land-holders (537), 15,224-9.
Nature study should be compulsory in schools (536).
Part-time schooling preferable, so as not to interfere with boy's training in his father's trade (544), 14,916-21.
School farms not desirable (537).
School plots desirable (536).
Students at agricultural colleges not drawn from agricultural classes (536).

SUBBARAYAN, Dr. P., M.L.C.—*contd.*

EDUCATION—*contd.*

Teachers, not sufficient for agricultural education (536).
———, for teaching agriculture, should be drawn from agricultural classes (536).
Technical knowledge of students, no attempt to improve (537).
Universities should give special facilities for agriculture (544).

FERTILISERS:

Artificial, value of should be demonstrated (540).
Cowdung, use of as fuel, should be penalised and substitute fuels made available (540), 15,125-6.
Investigation, not sufficient (540).
Sheep penning and leaf manure 14,952-7.

FINANCE:

Improvement of land hindered, *inter alia*, by lack of credit facilities (545).
———, banks will not give loans on land mortgage alone 14,922-6.
Irish Agricultural Organisation Society, co-operative societies similar to, required (539).
Taccavi, corruption among subordinate officials, leakage of 25 per cent., advances should be paid direct by Revenue Officers to borrowers (539).
———, an instance of leakage 14,882-4.
Well sinking (539).

HOLDINGS:

Arbitration necessary (540), 15,064-6.
Joint farming necessary to prevent sub-division (540).
———, dissatisfaction with joint family system in Malabar 15,270-2.
Legislation necessary to prevent sub-division (539).
———, compulsory, rather than permissive 15,085-7.
Minors, property of, guardians should be permitted to borrow upon for improvements (540).
———, analogous to Settled Land Act in England 14,898.

IMPLEMENTS:

Consolidation of holdings necessary to enable cultivators to use improved implements (541).
Prices must be lowered (541).

IRRIGATION:

Canal water, there should be co-operation between Agricultural and Irrigation Departments as to supply of (540).
Cauvery-Mettur Project, Salem should be included in (540), 15,127-37.
Lift irrigation, bullock power, should be developed (536), 14,866-70.
———, improved method 15,267-9.
Rainfall, no statement from Meteorological Office 14,980-2.
Salem, a dry area, sinking water table, wells sunk at expense of cultivator 14,945-9.
———, two crops, well-irrigated 14,950-1.
———, productivity of the soil has increased owing to use of fertilisers 14,952-7.
Water rate 15,194-212, 15,253-9.
Wells, system necessary for deepening (540).
———, in some places impossible to dig 14,964-5.
———, increase desirable 15,273.
———, under Estates Land Act rent can be raised after sinking of wells 15,274-7.

MANURE (*See under* FERTILISERS).

MARKETING:

Shandies 15,036-42.

SUBBARAYAN, Dr. P., M.L.C.—*contd.*

RESEARCH :

Central Research Bureau under Government of India to deal with crops common to all Provinces (536).
Cotton, improved, e.g. Cambodia, should be introduced (536).
———, more could be done 14,864-5.
Indigenous theory should be investigated (536).
Lift irrigation should be investigated (536).
Provincial research for crops special to each Province (536).

SALT, price of 15,177-81.

SOILS :

Prickly pear, lands covered with, should be given to tenants assessment-free (540).

VETERINARY :

Department should be independent of Agricultural Department, but there should be a system of co-ordination (541).
Dispensaries should be transferred to Provincial Governments (541).
———, cultivators do not make full use of, owing to lack of education (541).
Legislation necessary with regard to notification of diseases, &c. (541).
Muktesar Institute, officers of, should undertake special researches (541).
Research, further facilities necessary for (541).
Veterinary Officer, Special, with the Government of India, should be appointed (541).

WELFARE OF RURAL POPULATION :

Comparative expenditure by Government on urban and rural populations 15,184-90.
Drink evil must be checked (545).
———, crowded toddy shops 14,927-31.
———, heavy cost to labourers and cultivators and leads to ill-health and crime 14,932-44.
———, closing of toddy shops 15,043-4.
———, illicit distillation, corruption among subordinate staff of Excise Department 15,164-76.
———, women and children do not drink 15,182-3.
Education of villagers in health and sanitation by lectures and cinemas (543).
Educated youths should devote their time to social amelioration (537), but not much interest being shown at present 14,871-3.
Income, annual, of typical cultivator Rs.60 14,887-93, 15,078-80, 15,230-43, 15,282-3.
Standard of living and education must be raised 15,007-8.
Surveys, economic, of typical villages should be made by Government (545).

SUBSIDIARY INDUSTRIES (*see* **AGRICULTURAL INDUSTRIES**).

SUTHERLAND, Rev. W. S., B.D., United Free Church Mission, Chingleput, Madras.

ADMINISTRATION :

Panchayats, village self-government by, would probably not succeed 13,475-8.
———, depressed class do not complain as to grazing areas under 13,544.

AGRICULTURAL INDUSTRIES :

Basket-making, difficult (403).
Bee-keeping not likely to prove profitable on the plains, but requires investigation (402).
Carpentry 13,516-20.

SUTHERLAND, Rev. W. S., B.D.—*contd.*

AGRICULTURAL INDUSTRIES—*contd.*

Cultivator, average, probably does not work more than eight months a year (402).
Fruit-growing uncertain (402), 13,578-83.
Government should encourage industries connected with preparation of agricultural produce (403).
Health conditions can be improved by education and propaganda (403).
Middle schools could teach grass mat-making, weaving, rope-making, basket-making, poultry (402).
Oil-pressing could be adopted by villagers (403).
Pisciculture, not sufficient water for, in dry season (403).
Pottery (403).
Poultry, considerable opportunity (402).
Road repairs (402).
Rope-making could be developed (403).
Sericulture, heat would be an obstacle (402), 13,587-9.
Study of rural industries necessary (403).
Teaching children 13,584-6, 13,595.
Weaving taught in vocational middle school 13,515.
Women, lace-making 13,509-14.

AGRICULTURAL LABOUR:

Emigration, returned emigrants of depressed classes have improved standards 13,487-93.
——, are usually landless people 13,677-8.

CO-OPERATION:

Agricultural labourers' societies required (403).
Consolidation of fragmented holdings, necessary spirit for has not been produced by co-operative societies 13,648.
Credit societies, should do purchase and welfare work (403).
——, mixed castes, controlled by caste people to exploit outcastes (403).
——, unsatisfactory 13,461-73.
Economics, village, no attempt made to teach 13,645-7.
Financing village sites for depressed classes 13,474.
Panchayats, village self-government by, would probably not succeed 13,475-8.
Societies have not achieved their object (403).
——, some are self-managing 13,640-4.
Supervision, more required (403), 13,469.

EDUCATION:

Adult education in rural tracts by lantern lectures, &c. (402).
——, adults will not attend night schools 13,420-30, 13,649-57.
——, subsidiary occupations 13,664-70.
After-careers of agricultural students, consideration of should not carry weight (402).
——, best leave the land, 13,432-51, 13,450-5, 13,658-9.
Compulsory, economic conditions do not favour in rural areas (404).
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——, all pupils boys of the backward class 13,385-6.
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——, agriculture an optional subject 13,390-3.
——, pupils not all Christians, some sons of landowners 13,497-9.

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SUTHERLAND, Rev. W. S., B.D.—*contd.*

EDUCATION—*contd.*

High School at Chingleput, caste and depressed classes mixed 13,505-7.
——, agriculture and English 13,555-71.
——, competitive examinations 13,601-2.
——, English, time spent in learning 13,402-9.
——, curriculum prescribed by Government for secondary school-leaving certificate 13,626.
——, help from Industrial and Agricultural Departments 13,629-30.
Landlords, absentee, sons of, should be taught agriculture (401).
Middle Agricultural School, United Free Church Mission Agricultural School, Melrosapuram, teaching in the vernacular 13,378-82.
——, a vocational school 13,388-9, 13,603-8, 13,394-409.
——, U.F. Church Mission, Melrosapuram, Christians of the depressed classes 13,499.
——, 30 or 40 acres of land attached 13,500-4.
——, weaving 13,515.
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——, shortage of text-books 13,529-37.
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——, help from Industrial and Agricultural Departments 13,629-30.
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——, 5 per cent attain literacy 13,415-9.
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School farms necessary in middle and secondary schools (402).
Schools, middle and high, should lay great emphasis on agriculture (401-3).
School plots should be attached to elementary schools (402).
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Subsidiary industries should be taught (402), 13,584-6, 13,664-70.
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——, salaries 13,609-12, 13,658-63.
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——, largely from rural classes 13,480, 13,609-10.

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——, no incentive to improve land 13,448.
Permanent occupancy, landlords' method of preventing tenant obtaining 13,572-5.

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IRRIGATION:

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Wells in Chingleput 13,679-83.

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Poultry (402).

RESEARCH:

Beekeeping (402).

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Church, the only agency in Chingleput working for welfare of depressed classes 13,541-2.
Drink, intoxicating 13,494-7.
———, is increasing 13,545-55.
———, illicit distillation 13,671-6.
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Protection for Mysore silk (*Rao*) (11 and 12).
————————, 25 per cent. *ad valorem* import duty required (*Rao*) 9,212-21.

TIREMAN, The Hon. Mr. H., I.F.S., C.I.E., Chief Conservator of Forests, Madras.

ADMINISTRATION:

Panchayats, forest 11,028-35, 11,097-11,109, 11,128-30, 11,144-8, 11,177-81, 11,213-7, 11,259-60, 11,266-72, 11,280-3.

ANIMAL HUSBANDRY:

Grazing in forests 11,086-90, 11,111-3, 11,131-8, 11,179-80, 11,242-4.
——————, sheep 11,091-3.
——————, goats 11,126-7.
——————, silage 11,182-3.

CULTIVATION:

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Shifting (198-9), 11,067-85, 11,094-6, 11,223-4.

EDUCATION:

Coimbatore Forest College 11,150-3.

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Leaf manure in forests 11,217-8.

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Department, duties of 11,028, 11,259-60.
————, revenue and expenditure 11,174-80, 11,210-2.
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TIREMAN, The Hon. Mr. H., I.F.S., C.I.E.—*contd.*

FORESTS—*contd.*

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Manure, leaf 11,217-8.
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Research 11,157-61, 11,189, 11,284.
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RESEARCH.

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Erosion (198-9), 11,067-85, 11,114-8, 11,225-33.

VETERINARY. (*See* **AITCHISON**).

Conference of Provincial expert officers desirable (*R. Mudaliar*) (705).
Contagious diseases, obstacles in dealing with (*R. Mudaliar*) (705).
——————, methods for preventing spread of successful to a very limited extent otherwise services not satisfactory (*S. Mudaliar*) (425).
——————, legislation to deal with, at cost of Government (*S. Mudaliar*) (428).
——————, rinderpest (*S. Mudaliar*) 13,744-7
Control should be transferred to Provincial authority (*R. Mudaliar*) (704). 16,807.
Cost of Service excessive (*S. Mudaliar*) (428).
——————, but would be too costly if no charges were made, owing to travelling expenses (*S. Mudaliar*) 13,748-52.
Department, should be under Director of Agriculture (*S. Mudaliar*) (428) in order to decrease cost 13,700-1.
——————, should be under Director of Agriculture (*R. Mudaliar*) (704), 16,808-9.
——————, agricultural demonstrator may attend to petty diseases (*R. Mudaliar*) 17,080-6.
——————, should be independent of Agricultural Department, but there should be a system of co-ordination (*Subbarayan*) (541).
Dispensaries, expansion of, needed (*Kollengode*) (189-190).
——————, should be transferred to Provincial Governments (*Subbarayan*) (541).
——————, cultivators do not make full use of owing to lack of education (*Subbarayan*) (541)
——————, under Local Boards, very few and not likely to work well (*R. Mudaliar*) (704).
——————, should be increased (*R. Mudaliar*) (704).
——————, touring, full use has not been made of (*R. Mudaliar*) (704).
Expansion inadequate (*R. Mudaliar*) (704).
Indigenous treatment should be investigated and adopted (*S. Mudaliar*) (428).
Inoculation, demand for great (*Kollengode*) 10,929-35.
Legislation necessary with regard to notification of diseases &c. (*Subbarayan*) (541).

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Muktesar Institute, officers of, should undertake special researches (*S. Mudaliar*) (541).
Research into animal diseases, further facilities required (*S. Mudaliar*) (428), (*R. Mudaliar*) (705), (*Subbarayan*) (541).
Serum, no difficulty with regard to supply of (*R. Mudaliar*) (705).
Superior Veterinary Officer with Government of India not advisable (*R. Mudaliar*) (705), (*S. Mudaliar*) (428).
Touch with Provincial Agricultural Department very close (*Anstead*) 9662-7.
Touring veterinary assistants used to do a good deal of castration, but have been abolished (*Leach*) (590), 15,619-22.
Veterinary officer, Special, with the Government of India, should be appointed (*Subbarayan*) (541).

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Advance should be general (*Anstead*) 10,713-4.
Agricultural problem, not exclusively an (*MacMichael*) 12,213-24.
Bombay compared with Madras (*Reddi*) 12,795-805.
Broadcasting, importance of (*Anstead*) 9509-10.
Church, the only agency in Chingleput working for welfare of depressed classes (*Sutherland*) 13,541-2.
Communications, unsatisfactory, affecting marketing, education, medical relief (*Paul*) 11,595-11,611.
Comparative expenditure by Government on urban and rural population (*Subbarayan*) 15,184-90.
Complaints by ryots (*Leach*) 15,678-81.
Conditions of labouring class, unsatisfactory (*Leach*) 15,709.
——————, in zamindari as compared with ryotwari districts (*Leach*) 15,635-8.
Congestion in villages (*Paul*) 11,614.
Co-operative society, supply information as to economic position of their members (*Reddi*) (350).
Cultivators' position improving (*Anstead*) 9,777-9, 10,195-10,212.
Drinking water supply: being improved (*Paddison*) (315).
——————, Government supply for depressed classes (*Paddison*) 12,395, 12,408-9.
——————, often insufficient and contaminated (*Reddi*) (350).
Drink, intoxicating (*Sutherland*) 13,494-7, (*Paddison*) (315).
———, a great improvement (*Paddison*) 12,484-8.
———, abkari revenue four to five crores (*Paddison*) 12,616-7.
———, local prohibition (*Paddison*) 12,682-3.
———, causes indebtedness (*Anstead*) 9476-9.
———, seriousness of (*Ramdas* and *Sivaswami*) (679-80).
———, is increasing (*Sutherland*) 13,545-55.
———, illicit distillation (*Sutherland*) 13,671-6.
———, has spread among lower classes (*Reddi*) (346), 12,806-28.
———, Excise Administration Report shows a decrease (*Reddi*) 13,025-8.
———, prohibition experiments (*Reddi*) 13,029-32.
———, evil must be checked (*Subbarayan*) (545).
———, crowded toddy shops (*Subbarayan*) 14,927-31.
———, heavy cost to labourers and cultivators and leads to ill-health and crime (*Subbarayan*) 14,932-44.
———, closing of toddy shops (*Subbarayan*) 15,043-4.
———, illicit distillation, corruption among subordinate staff of Excise Department (*Subbarayan*) 15,164-76.
———, women and children do not drink (*Subbarayan*) 15,182-3.
Educated men taking interest in rural affairs (*Reddi*) 12,783-94.
Educated youths should devote their time to social amelioration (*Subbarayan*) (537), but not much interest being shown at present 14,871-3.
Education of villagers in health and sanitation by lectures and cinemas (*Subbarayan*) (543), (*S. Mudaliar*) (429).

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Emigration (*MacMichael*) 11,896-905, 12,274-6, 12,333-46, (*Leach*) 15,715-24.
Emigrants, returned, have good social influence (*Paddison*) 12,691-3.
Employment, labourer sometimes a slave (*Leach*) 15,710-4.
Famine, causing unemployment (*Paddison*) (316).
Family budget not worked out (*Paddison*) 12,618.
Funds for rural improvements should be obtained by retrenchment in salaries of Government servants (*Narasimharaju*) 15,559-68, 15,585-8.
————————, cannot be obtained by retrenchment in salaries of Government servants (*Leach*) 15,725-9.
General lines, work should be along (*Paul*) (229).
————, regarding rural problem as a unit (*Paul*) 11,295-6, 11,643-5.
Health, factors affecting (*Paddison*) (315)
——, conditions can be improved by education and propaganda (*Sutherland*) (403).
Holdings, effect of size of (*R. Mudaliar*) (706), 16,952-3.
Hookworm (*Anstead*) 9963-5.
————, almost universal (*Paddison*) (315).
————————, among people who do not wear shoes (*Paddison*) 12,410-3.
Housing, provision of (*Paddison*) (315), 12,376-80.
———, by Government and co-operative societies (*Paddison*) 12,397-407.
———, not built on piles (*Paddison*) 12,413-22.
———, unfortunate results of tied cottages (*Paddison*) 12,642-6 (*Anstead*) 9966-80.
Income, annual, of typical cultivator Rs.60 (*Subbarayan*) 14,887-93, 15,078-80, 15,230-43, 15,282-3.
Labour, conditions of (*Paddison*) (315).
————————, as to diet no information (*Paddison*) 12,478-83.
Labour of villagers for improvement of villages (*Leach*) 15,666-71.
Land revenue, a large part of should be devoted to improving conditions of rural population (*R. Mudaliar*) (698) 16,840-2.
Local bodies, work of, for rural betterment (*Narasimharaju*) 15,490-502
Maternity, conditions of (*Paddison*) (315)
————, difficulty in providing women workers with maternity benefits (*Paddison*) 12,663-5.
Nightsoil as manure (*S. Mudaliar*) 13,860-3.
Non-official work helped by officials (*Paul*) (229), 11,296-7, 11,436-8, 11,479-84.
Organisation of educated persons for social work (*Anstead*) (37).
Panchayats, village, have made a good beginning (*Leach*) 15,639-46.
————, are elected (*Leach*) 15,730-5.
————, should be encouraged (*Narasimharaju*) 15,537-56, (*Anstead*) (37), 9396-403.
Pessimism as to outlook for poor people (*Anstead*) 10,130-1.
Population not increasing (*Anstead*) 10,218-27.
Post Office savings bank could encourage thrift (*Anstead*) 9504-8.
Public spirit, lack of (*Reddi*) 12,984-9.
Recreation (*Paddison*) (315).
Reforms of 1919 have not affected agricultural outlook (*Reddi*) 12,774-8
Rural congestion not being relieved by expansion of industries (*Paddison*) 12,690.
Rural economics, study of, would not serve any purpose (*Reddi*) 12,779-82.
Rural reconstruction should be undertaken by Government and not left to unofficial agencies (*Reddi*) 13,125-30.
Sanitation, village (*Paul*) 11,612-3.
Savings certificates, importance of (*Anstead*) 9511-8.
Slight manifestation of desire for improvement (*Leach*) 15,623-9.
Standard of life (*MacMichael*) 11,893-5.
————, with reference to fragmentation (*MacMichael*) 12,009-14.
————, and of education must be raised (*Subbarayan*) 15,007-8, (*Reddi*) 12,771-3.
————, desire by educated persons for higher standard (*Reddi*) 12,927-31.
————, influence of war service (*Reddi*) 12,932-3.

WELFARE OF RURAL POPULATION—*contd.*

Surveys, economic, should be carried out (*R. Mudaliar*) (707), (*MacMichael*) 12,285-6.
———, should be conducted by Government (*S. Mudaliar*) (429).
———, of typical villages (*Subbarayan*) (545).
———, should not be undertaken for a decade (*Reddi*) (350).
Thrift essential (*MacMichael*) 11,826-7, 11,892-3, 11,985-8, 12,003-8.
———, examples of extravagance (*MacMichael*) 12,247-57.
———, Is there a margin on which to save (*MacMichael*) 12,258-63.
University students, ignorance of social conditions (*Paul*) 11,475-8.
Village, average, has no club, recreation ground, hospital, road, post office or public library (*Reddi*) (350).
Voluntary workers (*Ramdas and Sivaswami*) 16,655-7, 16,717-20, (*R. Mudaliar*) 16,954-60.
Wages, effect of, on standard of living (*Paddison*) 12,556-68.
———, annual earnings (*Paddison*) 12,649-55.
———, jail food allowance (*Paddison*) 12,656-9.
———, relation between nourishment and liability to disease (*Paddison*) 12,660-1.
Water supply good (*Anstead*) 9959-65.
Young Men's Christian Association, work of (*Paul*) 11,299, 11,416-9, 11,449-50, 11,532-9, 11,566.

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GLOSSARY.

Ayacut	The land irrigable by an irrigation work.
Chaprasi	Peon (a messenger in the employ of Government).
Charka	Indigenous spinning wheel.
Cheri	Segregated portion of a village inhabited by low class people.
Cholam	The large millet, a very common food grain. (*Sorghum vulgare*).
Chuklars	Cobblers.
Cumbu	A small millet (*Pennisetum typhoideum*).
Dal	A generic term for pulses.
Darkhast	Application for a grant of waste land.
Dhoby	Washerman.
Dhoti	A garment for the lower part of the body consisting of one long piece.
Fasli	The revenue year beginning on the 1st of July and ending on the 30th June.
Inam	A grant by the Government of land free from land revenue or on favourable terms or of the land revenue on a specified piece of land.
Jamabandi	An annual account of lands held in a village and the amount of land revenue due on them.
Janmi	The name given in Malabar to the registered holder of land on ryotwari tenure.
Jatka pony	Pony for light vehicle.
Kadim	A system of land tenure in Mysore.
Kalam	A local measure for grains which varies from district to district.
Kanam	A tenure in Malabar partaking of the nature of both a mortgage and a lease.
Kanamdar	A person who holds land under a janmi on Kanam tenure.
Kangani	A labour recruiter.
Karnam	A village accountant.
Kichilisamba	A variety of paddy.
Kist	Land revenue assessment.
Koduval	Indigenous chaff cutter.
Koran	Mahommedan Scripture.
Kudimaramat Act	An Irrigation Act providing for the repair of irrigation works by villagers themselves.
Kudivaram	Popularly used to denote the share of the produce of land to which the tenant who cultivates it is entitled as against the landholder.
Kudivaram right	Occupancy right in land.
Lanka	Island.
Manawari	Dependent on rains.
Mariama	A Hindu Goddess.
Maulvi	A person learned in Mahommedan Law.
Measure (Padi)	A measure of capacity varying from district to district.
Melwaram	Popularly used to denote the share of the produce of land due to a landholder from his tenant who cultivates the land.

Mirasidar . . .	Historically denotes an inhabitant of a village who has a preferential right to waste land in it. Now generally used to denote any landholder in a ryotwari village.
Mote	An indigenous water lift.
Munsif . . .	Judge of the lowest court with civil jurisdiction.
Nayudu . . .	A farming class.
Panchangamdar .	Hindu Priest.
Panchamas . .	A class of outcasts.
Panchayat . .	Literally a Committee of five. Used to describe an association of any number of persons instituted for objects of an administrative or judicial nature.
Panchayatdar . .	Member of the Panchayat.
Pandit . . .	Hindu title, strictly speaking applied to a person versed in the Hindu Scriptures.
Pariah (*see* Panchamas).	
Patta . . .	The written demand issued annually for the land revenue due in respect of ryotwari land (or for the rent due to a landholder from certain of his tenants under Madras Act I of 1908).
Pattadar . . .	Registered holder of ryotwari land.
Pattagar . . .	Honorafic title given to the chief by the tribesmen.
Peishcush . . .	Permanent assessment of revenue payable to Government by zamindars or other landholders holding under a sanad-i-milkiyat-i-istimrar issued under the Madras Permanent Settlement Regulation, XXV of 1802.
Peth	Large village.
Picottah (*see* Mote).	
Podu . . .	Land cleared from thicket and prepared for shifting cultivation.
Pongal . . .	Hindu festival.
Poonac . . .	Oil-seed cake.
Poramboke . .	Land at the disposal of the Government set apart for any Government or other public purpose.
Putti	A measure of capacity varying from district to district.
Purohit . . .	Family priest.
Ragi	A coarse millet (*Eleusine coracana*).
Sari	Indian dress for women.
Sindiwahi . . .	Name of a furnace used for boiling sugarcane juice.
Shandy or Sandi .	Weekly market.
Sastras . . .	The Hindu Scriptures.
Sowcar . . .	Moneylender.
Taccavi . . .	Advances made by Government to cultivators for agricultural purposes.
Tahsildar . . .	An officer in charge of a tahsil (a local revenue division of a district).
Tamasha . . .	Carnival.
Taram . . .	Quality of land.
Tharwad . . .	A family (in Malabar).
Thenai . . .	Italian Millet (*Setaria Italica*).
Tope	A plantation of trees.
Vaidyan . . .	Village doctor.
Vetti . . .	A village menial.
Verumpattamdars .	Tenants at will, lowest class of tenant liable to be evicted at the end of the year.

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